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Baseline and Interpretive Biophysical In-
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Alberta

CONSERVATION AND UTILIZATION
COMMITTEE

BASELINE AND INTERPRETATIVE BIOPHYSICAL INFORMATION

AVAILABLE DATA AND CURRENT
PROGRAMS

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BASELINE AND INTERPRETATIVE BIOPHYSICAL INFORMATION AVAILABLE DATA AND CURRENT PROGRAMS

Prepared by

L. J. Cooke, Land Supply Coordinator

D. C. Morgenstern, Research Assistant

*for the
Conservation and Utilization Committee*

October, 1974

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INTRODUCTION AND FRAMEWORK

The Conservation and Utilization Committee has identified a need to establish a comprehensive perspective to guide and coordinate land inventory activities. In order to adequately formulate the necessary policies and program strategies, two basic information sets are required:

1. Available information and current programs, and
2. Information needs for resource planning and management.

This report concerns the first information requirement. It identifies and describes past and present data gathering programs within the natural resources field which provide either baseline or interpretative biophysical data.

The information needs for natural resource management and planning are much more difficult to identify, requiring a complex research and integration process. Each agency must closely examine its management and planning responsibilities and clearly define its information requirements, including scale, content, organization, method of storage and priorities. Through interagency and interdepartmental participation, and the use of a systematic approach, the comprehensive and complete information needs of natural resource planning and management can be evolved. Of prime importance in developing this "ideal" management information system is the identification of the linkages in the system, both insofar as the data are concerned and the agencies. For the data, a sequence of inventory is important in that some types serve as prerequisites for others. The relationship of the agencies and their common data needs must be identified in order to ensure thorough communication and consideration prior to final resolution of inventory programs.

Upon completion of these two summaries, it will then be possible to compare them and systematically identify information gaps and priorities for natural resource inventories. From this the policies and strategies required to provide the comprehensive perspective can be developed, and long range programs established which will efficiently and effectively provide the basis for a natural resource management information system.

APPROACH AND REPORT FORMAT

After initiation of the study by the Conservation and Utilization Committee at the meeting of May 14, 1974, each member designated an agency representative to provide necessary inputs to the study. Through discussion and/or submissions, inputs were obtained from all agencies involved in baseline and interpretative natural resource inventories and/or data assembly programs. The questionnaires on Land Related Information Systems compiled by the Task Force on Urbanization and the Future have been used as an additional source of information.

The contents of the report have been organized in accordance with the framework of a natural resource information system rather than strictly on an agency basis. The primary components are baseline biophysical information and interpretative information. Baseline data are considered to be those which provide a **description** of the existing physical or biological characteristics of land in a scientific manner. Interpretative information is that which provides an **assessment** of the natural resource base using one or more types of baseline data and introducing predefined value systems, quantitative and/or subjective.

The next order of division is into subsurface, surface and atmospheric regimes. In turn, each regime is subdivided into its major formation types.

For each data set a relatively consistent group of parameters is discussed. Rather than presenting a detailed discussion of the contents of each information set, the discussion is focused on those aspects relevant to the task of using this summary in the development of a natural resource management information system. The following parameters provide the framework of the summaries:

1. Data type,
2. Responsible agency,
3. General description,
4. Scale,
5. Coverage,
6. Method of storage,
7. Availability.

At the conclusion of the discussion for each information set, an attempt is made to provide a composite picture of the total information available for that data type.

BASELINE DATA

Subsurface

I Bedrock Geology

Bedrock, in general terms, includes all strata older than glacial deposits of the Pleistocene Period. Bedrock in Alberta ranges from the crystalline Precambrian basement rock (outcrops in northeast Alberta), through the southwest dipping sedimentary formations of northern, central, and southeast Alberta, to the highly folded and faulted rocks of the Cordilleran complex ranging in age from Precambrian to Tertiary.

1. Alberta Research

The entire province is represented by a bedrock geology map at a scale of 1 inch to 20 miles (examining major bedrock formations), published by Alberta Research. Bedrock geology coverage at other scales is indicated on Map 1. Alberta Research has, as well, an extensive document file of driller's logs for water wells. An additional file is maintained containing geophysical logs (E-logs, gamma ray-neutron logs, and temperature logs) for deep wells, but all of these are also available from commercial outlets and at the Energy Resources Conservation Board. Alberta Research at present has approximately 50% coverage of bedrock topography for the province. The extent and scale of coverage is indicated on Map 2. Beginning in 1969, Alberta Research adopted a standard scale (1:250,000) and format which also shows (aside from bedrock topography) the thickness of surficial deposits, and preglacial valley thalwegs. Appendix 1 indicates the status of the Bedrock Topography Mapping Program of Alberta Research to date.

2. Geological Survey of Canada

Approximately 30% of the bedrock geology of Alberta has been mapped by the G.S.C. at a scale of 1 inch to 4 miles. In addition, most of the foothills belt has been mapped at 1 inch to 1 mile, or at 1:50,000. The extent of these and other scales are indicated in Maps 3a, 3b, and 3c. Many of the maps are accompanied by geological reports.

3. Energy Resources Conservation Board

Most information held by the E.R.C.B. relates directly to petroleum well data, coal hole data, and coal mine data. The files consist of records of every deep well, and most coal holes (few are deeper than 500 feet) drilled in Alberta, as well as production statistics, test analyses and field outlines. The methods of storage include microfilm, magnetic tape and files. Some of the information

stored as a hard copy file is presently in the process of being converted to magnetic tape storage. Basic petroleum and service well data are readily available in the form of computer print-outs from the Calgary centre. Basic coal exploration and coal mine data are available as hard copies and microfilm, respectively. Examples of retrievable information are included in Appendix 2. It should be noted that although much information is non-confidential, many prospective programs (petroleum, coal exploration and mine development) are confidential. Depending on conditions, these data may not be available for periods of up to several years.

Broadly viewing the aforementioned agency outputs, the information supplied by Alberta Research and the Geological Survey of Canada provide us with the first two dimensions in a three-dimensional information package. Bedrock geology and bedrock topography maps indicate formations at or near the surface giving rise to dimensions one and two. The third dimension, depth, is provided by information supplied by the Energy Resources Conservation Board. In addition, some interpretative reports by Alberta Research and the Geological Survey of Canada supplement the information provided by E.R.C.B. Integration of agency data is therefore necessary for a comprehensive information picture in three dimensions (See Figure 1).

II Surficial and Glacial Geology

Information depicted on surficial geology maps includes materials originating from glacial or proglacial deposition during the Pleistocene Period. During this period, glacial ice covered most of Alberta, resulting in depths of up to several hundred feet of drift being deposited on the bedrock. Other deposits shown include those of Recent origin (past 10,000 years before present): river alluvium, deltaic deposits, and lake bottom sediments.

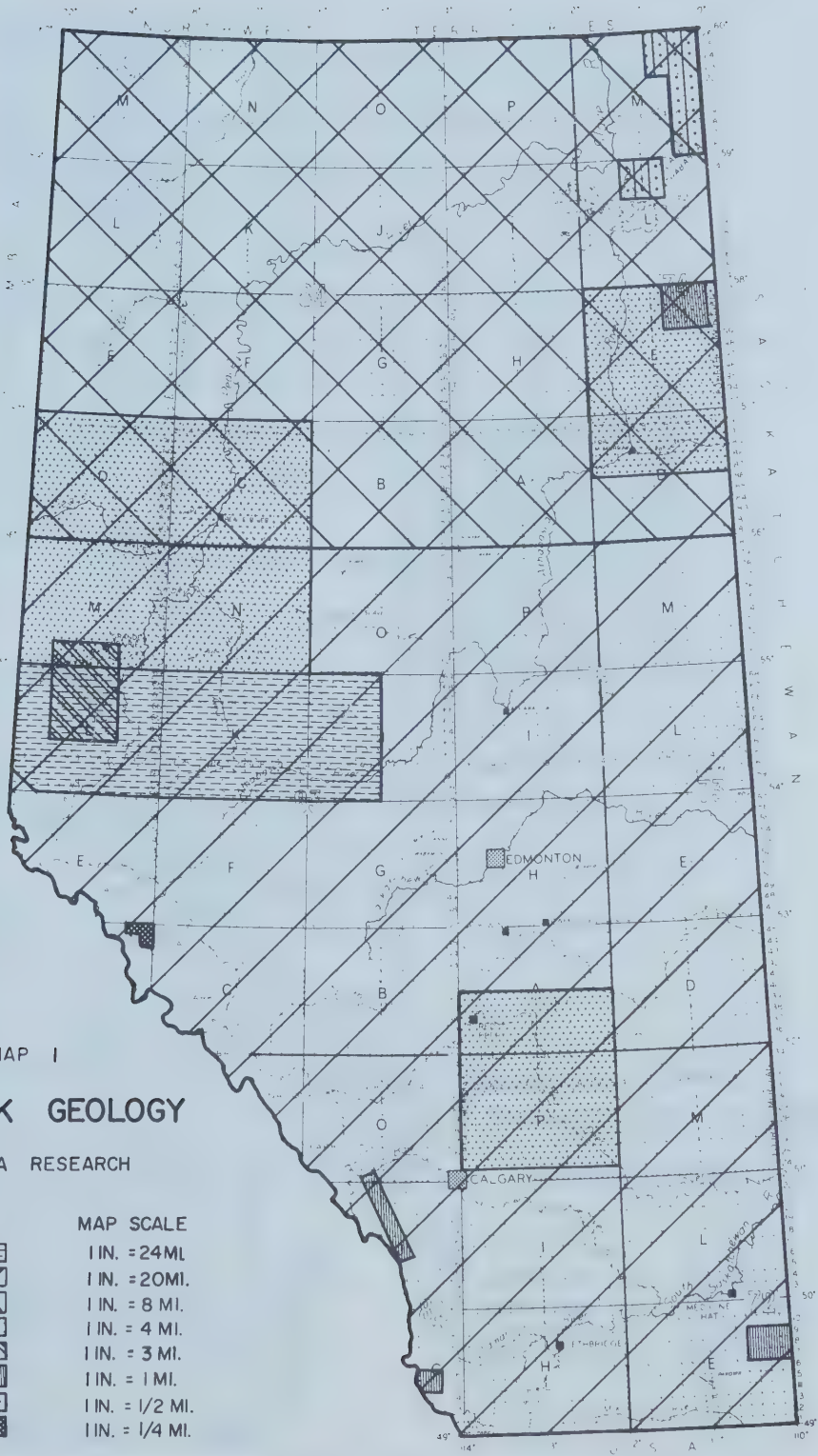
1. Alberta Research

Part of the surficial geology mapping by Alberta Research has been done on a scale of 1 inch to 1 mile, and part at 1 inch to 4 miles. Recent mapping contracted through Alberta Research has also been at a scale of 1 inch to 4 miles.

2. Geological Survey of Canada

Most mapping by G.S.C. has been completed at a scale of 1 inch to 4 miles (1:250,000).

For the extent and scale of surficial geology map coverage (Alberta Research and G.S.C.), refer to Map 4.

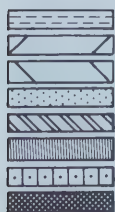


MAP 1

BEDROCK GEOLOGY

ALBERTA RESEARCH

MAP SCALE

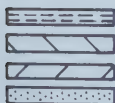


1 IN. = 24 MI.
 1 IN. = 20 MI.
 1 IN. = 8 MI.
 1 IN. = 4 MI.
 1 IN. = 3 MI.
 1 IN. = 1 MI.
 1 IN. = 1/2 MI.
 1 IN. = 1/4 MI.

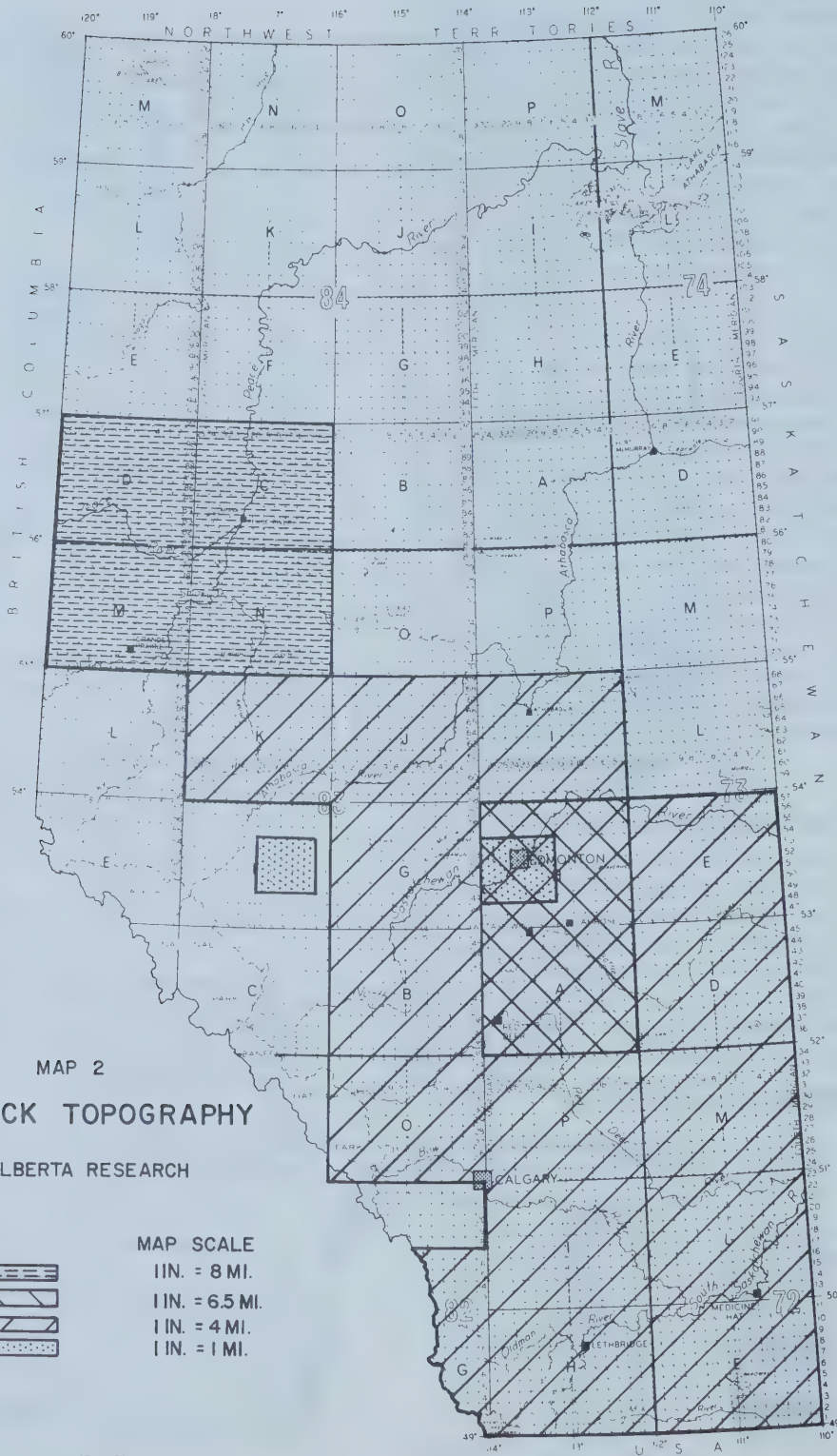
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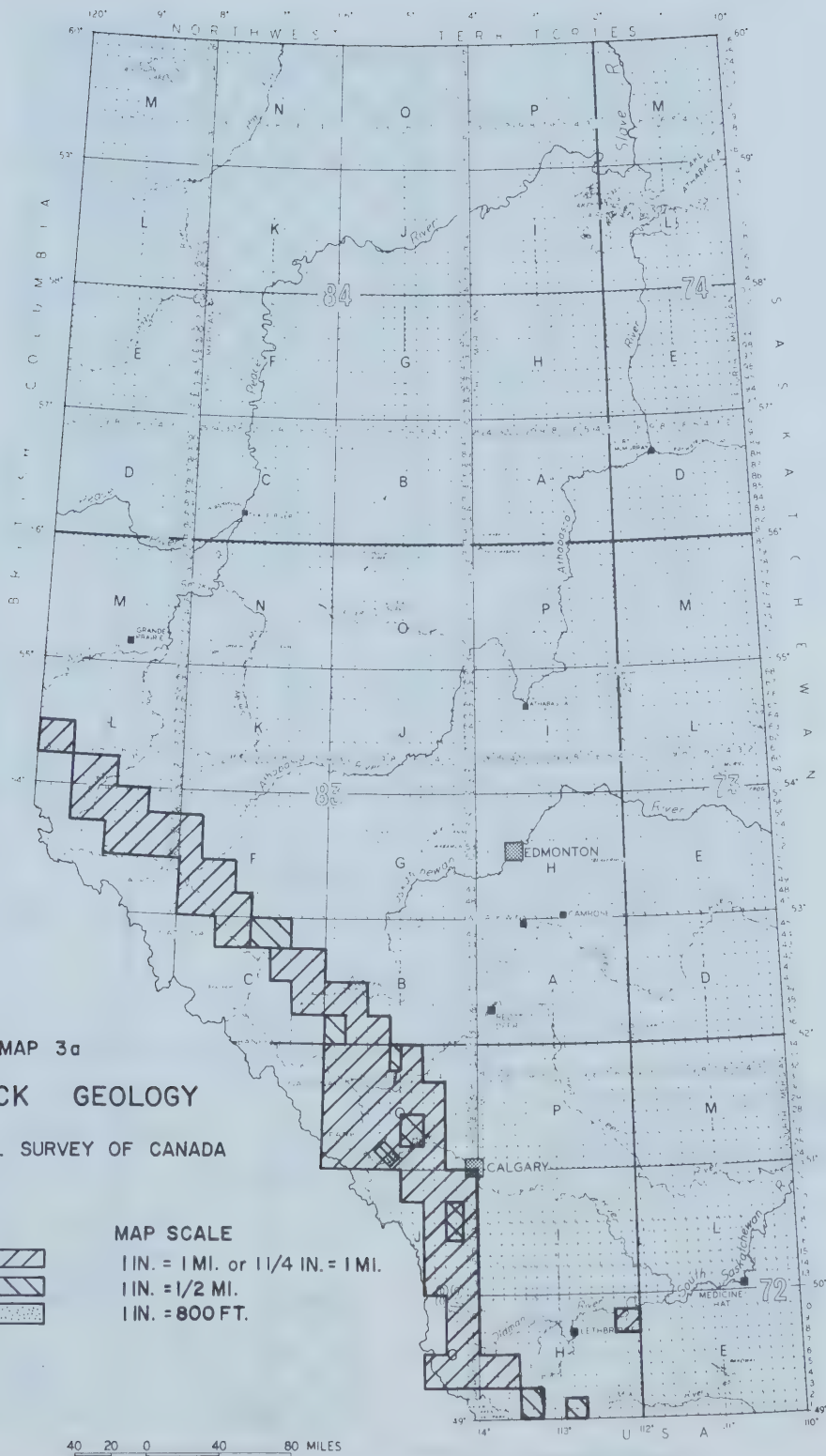
MAP 2
BEDROCK TOPOGRAPHY
ALBERTA RESEARCH

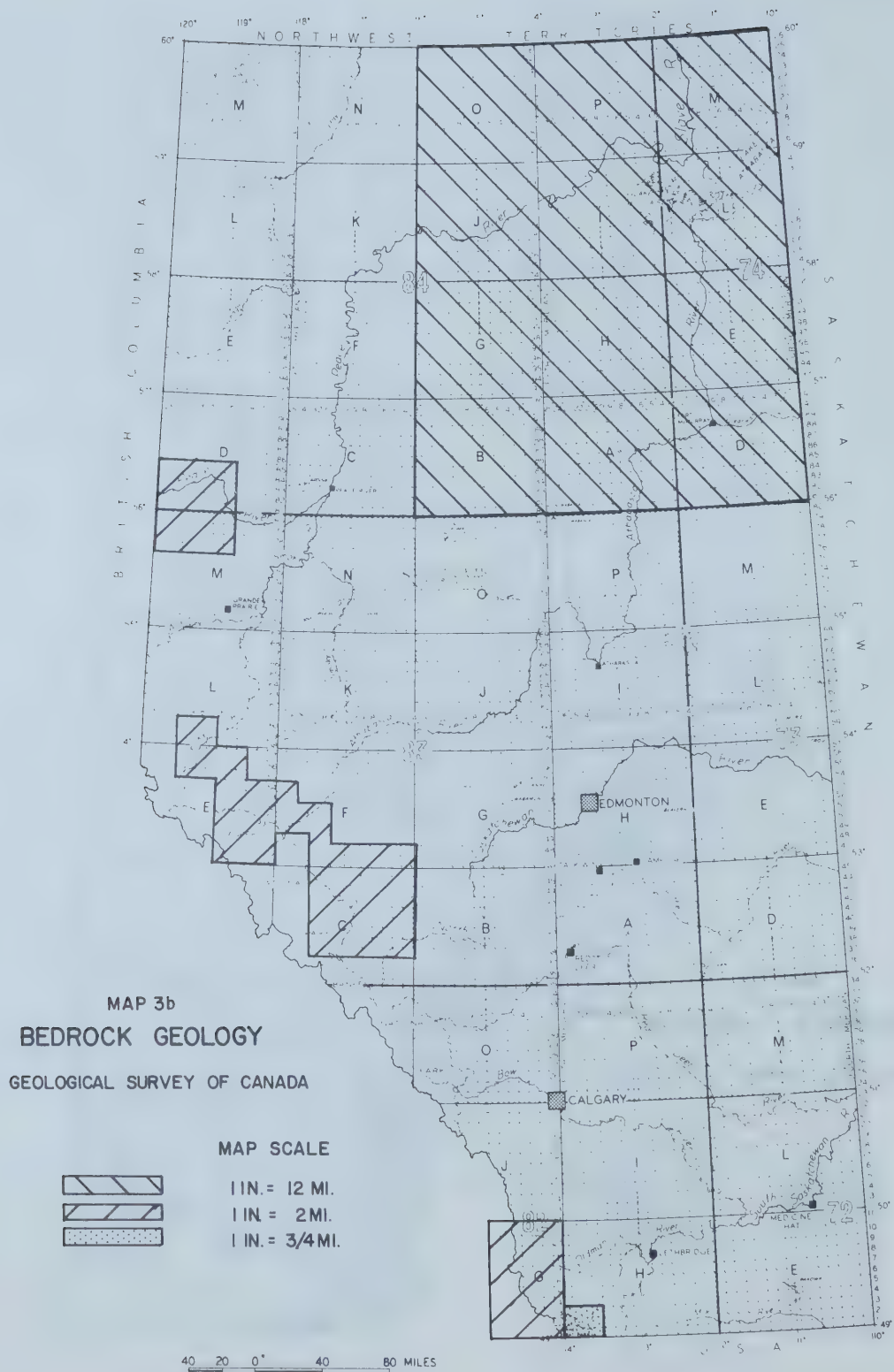
MAP SCALE
1 IN. = 8 MI.
1 IN. = 6.5 MI.
1 IN. = 4 MI.
1 IN. = 1 MI.



40 20 0 40 80 MILES







MAP 4
SURFICIAL AND
GLACIAL GEOLOGY
 ALBERTA RESEARCH AND
 GEOLOGICAL SURVEY OF CANADA

MAP SCALE



1 IN. = 8 MI.

1 IN. = 4 MI.

1 IN. = 1 MI.

40 20 0 40 80 MILES

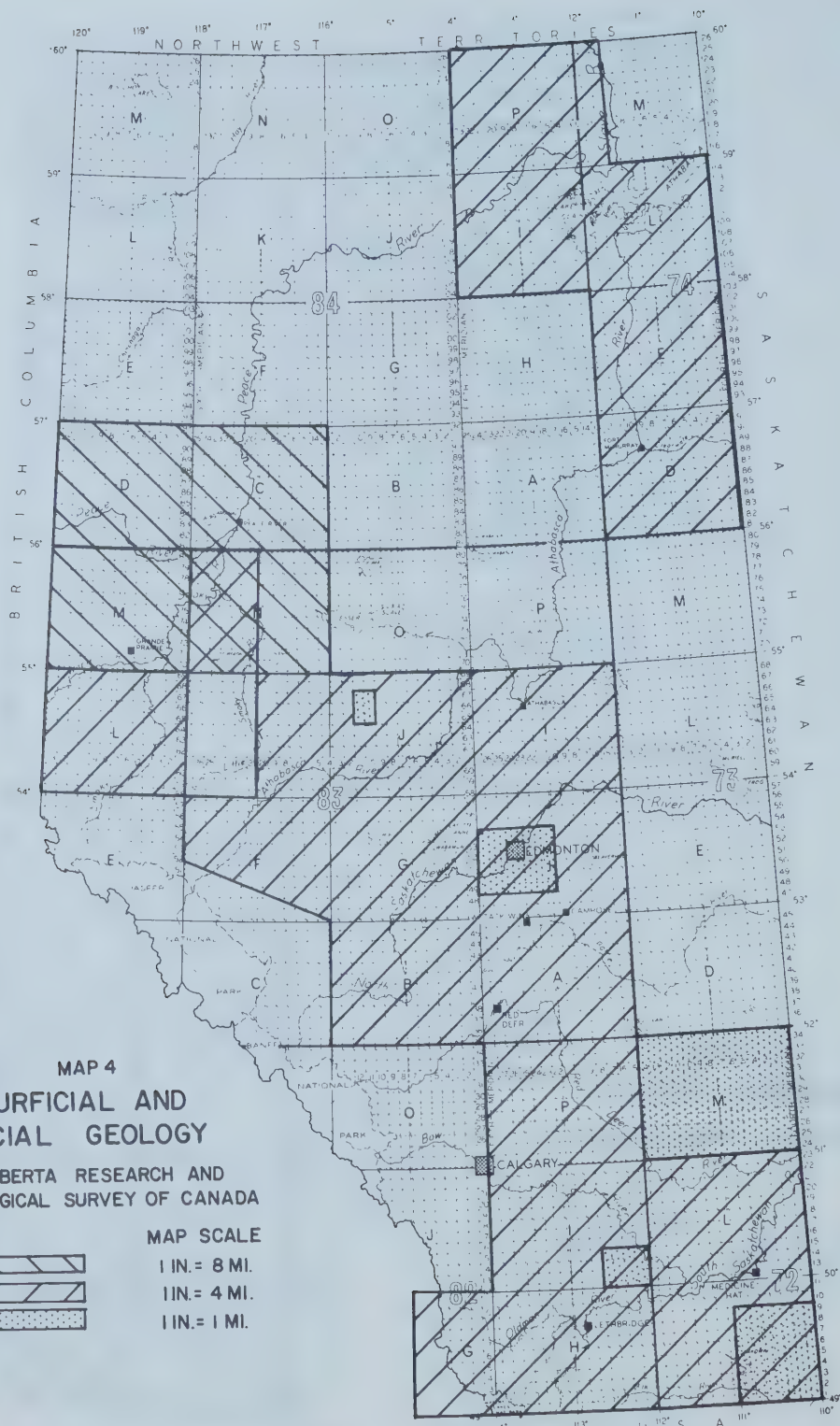
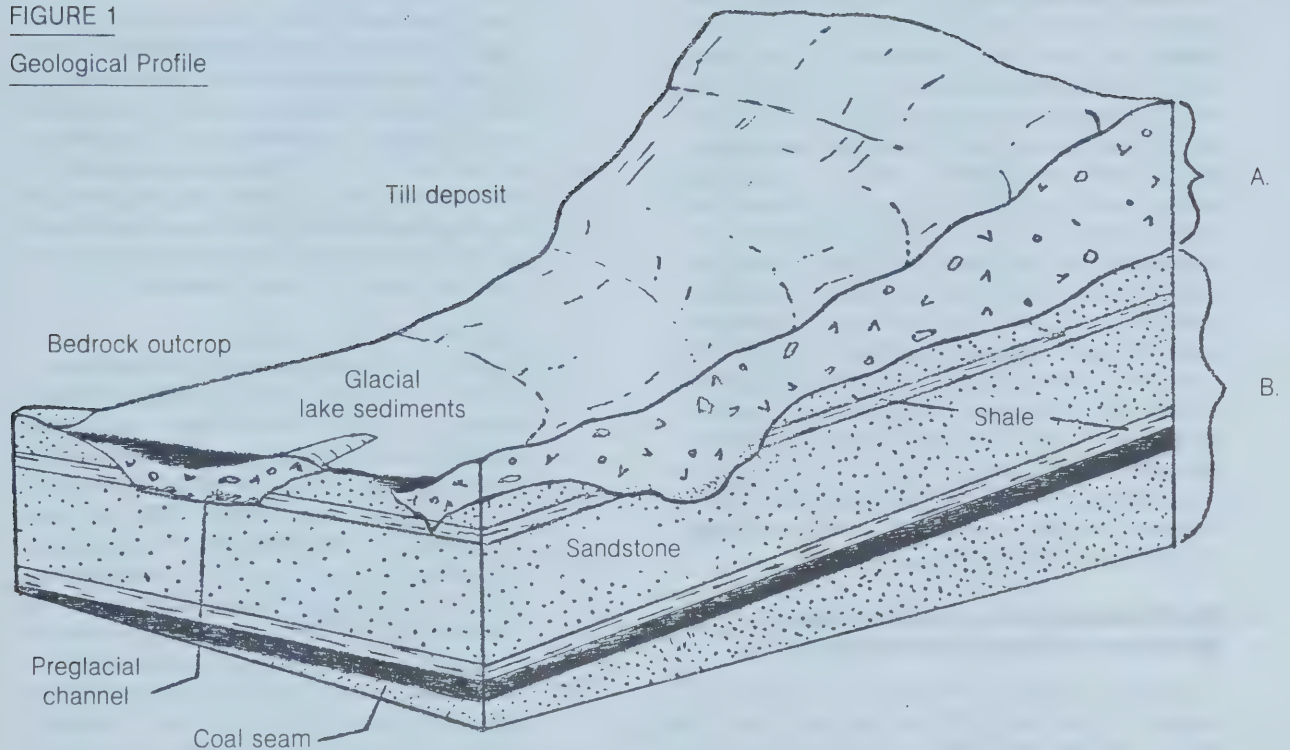


FIGURE 1

Geological Profile



This three-dimensional representation attempts to diagrammatically differentiate between bedrock and surficial geology. Bedrock in Alberta is of continental or marine origin (sedimentary rock) down to the crystalline Precambrian basement. The surficial deposits consist of materials derived from the Quaternary Period, including glacial and Recent deposits.

- A. Surficial Geology — examines materials derived as a result of glacial and postglacial deposition (outcropping bedrock falls under this realm of study). Materials may include till, glacio-fluvial sands and gravels, aeolian (wind deposited) sands, and proglacial lake (lacustrine) deposits. The glacio-fluvial sands and gravels are often good sources of groundwater.
- B. Bedrock Geology — examines everything other than surficial deposits. In Alberta, bedrock (down to the Precambrian basement) is sedimentary in nature and may include sandstones, shales, limestones, dolomites and evaporites. Bentonitic beds and coal seams are common within Cretaceous and Tertiary formations in Alberta.
- C. Bedrock Topography — is an iso-contour rendition of the surface of any specified rock formation.

III Hydrogeology

1. Alberta Research

Hydrogeological maps published by Alberta Research have been mainly at the scale of 1 inch to 4 miles, although the Fort McMurray area of the province is at a scale of 1 inch to 8 miles. Map sheet 83H, and the Grimshaw-Chinook Valley sheet are both at a scale of 1 inch to 2 miles. The maps provide information pertinent to the extent, quantity, and quality of groundwater available, as well as some interpretative information regarding groundwater probability yields. These are depicted both for surficial deposits and bedrock formations. The published maps have been completed from 1:50,000 working sheets, which are available for use at Alberta Research (Groundwater Division). Map 5 indicates the extent and scale of hydrogeological mapping completed. Areas covered by other Alberta Research groundwater studies are indicated on Map 6. Appendix 3 indicates the status of the Hydrogeological Reconnaissance Mapping Program by Alberta Research, as well as projected completion dates for areas presently being surveyed.

2. Earth Sciences and Licensing Division, Alberta Environment

The Earth Sciences and Licensing Division of Alberta Environment has been active in the conduct of studies consisting of drilling and aquifer evaluation throughout the province in preglacial channel deposits between Lac La Biche and Medicine Hat, although future exploration is to be concentrated in central Alberta. Complementary to these studies are preliminary groundwater evaluations by consultants for the purpose of obtaining water rights, well reports including those completed on Metis settlements, detailed investigational reports on groundwater contamination and inspection reports associated with well construction problems or deterioration (See Map 7 and Appendix 4).

Data from the provincial groundwater files have been supplied by Alberta Research to the Earth Sciences and Licensing Division with the intention of coding and storage for computer manipulation and retrieval. Coded files for the Edmonton area are now completed, and selective retrieval for the entire province will eventually be available.

IV Soils

1. Alberta Institute of Pedology

Soils mapping in the province has been carried out by the Alberta Institute of Pedology. The In-

stitute consists of the Soils Division of Alberta Research, the Research Branch of Canada Department of Agriculture, and the Soil Science Department of the University of Alberta.

A. Exploratory Soil Survey

Eight exploratory soil survey reports have been published by Alberta Research for areas in central and northern Alberta (See Appendix 5). The maps are at a scale of 1:750,000 and were compiled to outline areas of potentially arable land in the northern remote portion of the province. The scale of mapping is such that the maps are only suitable for the provincial level of planning. The reports are available from the library of Alberta Research.

B. Reconnaissance Soil Survey

Some 31 reconnaissance soil survey reports have been published in Alberta (refer to Map 8 and Appendix 5). Of this number, 15 are now out of print leaving a large area of central and southern Alberta for which soils information is not available. In fact, south of 53°N. only one soil survey report is available for distribution. At the present time mapping is under way for the Wapiti (83L) and Iosegun (83K) areas by Alberta Research. The Canada Department of Agriculture has completed mapping in Waterton Lakes National Park (1:50,000) and on the Sand River map sheet (73L at 1:125,000). Both are in semi-published form and mapping of the Oyen map sheet is now in progress by the C.D.A. It is worthy of note that each map sheet requires approximately 4 to 5 years to complete field work and report compilation.

While past reconnaissance survey mapping includes publication scales ranging from 1:63,360 to 1:250,000, mapping is now published at a scale of 1:126,000. This information is suitable for regional planning and resource management but has limited application in detailed planning. All reconnaissance soil surveys are published by the University of Alberta and are available from the Department of Extension.

C. Semi-Detailed Soil Survey

A semi-detailed soil survey of the County of Two Hills is presently under way. This survey uses a mapping scale of 1:30,000 but future surveys at this level may use a scale of 1:50,000. The present program is considered experimental and is being used to develop a mapping intensity between the reconnaissance (1:126,000) and the detailed (1:6,000) surveys.

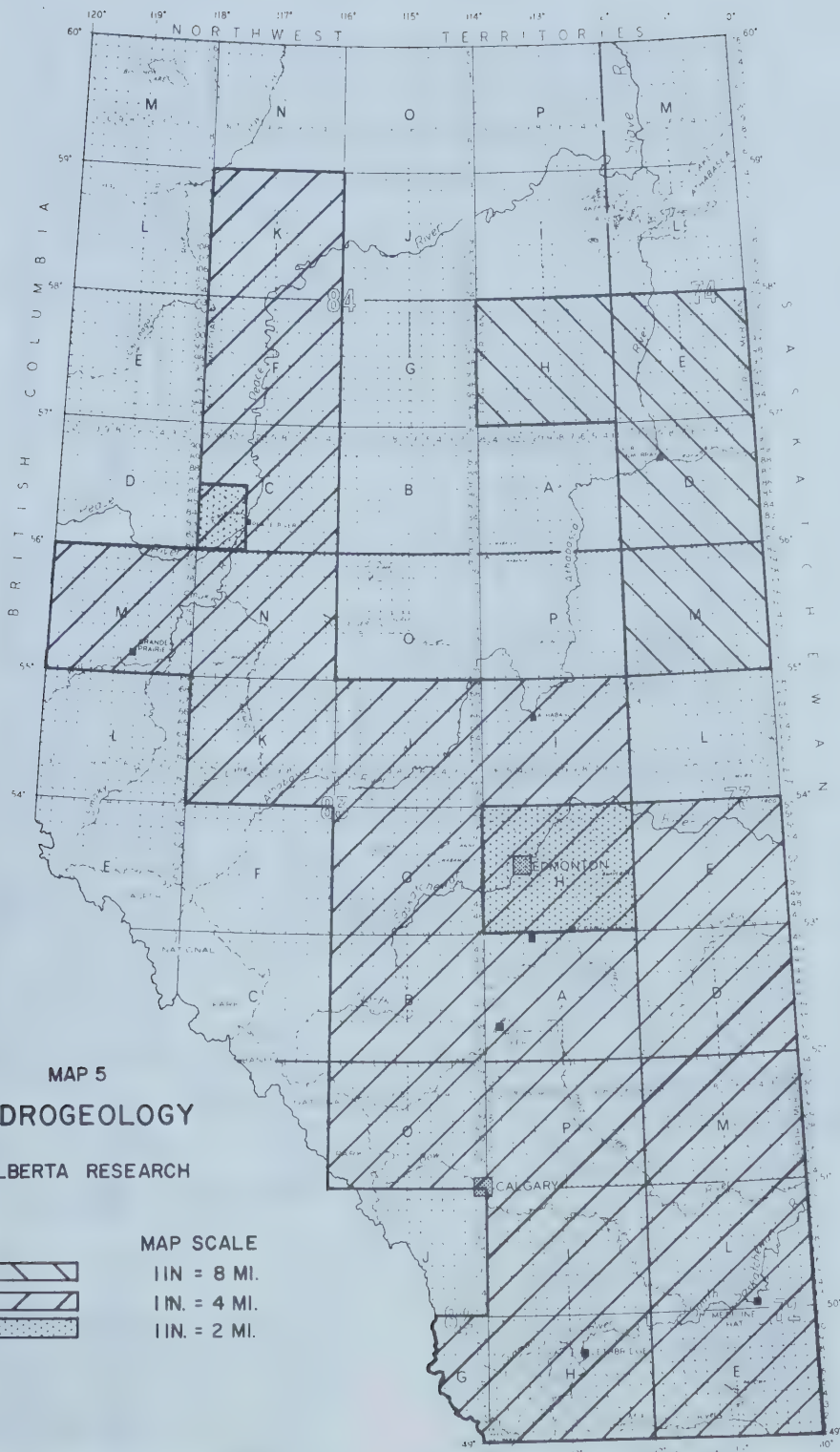
MAP 5
HYDROGEOLOGY
ALBERTA RESEARCH

MAP SCALE



1 IN. = 8 MI.
1 IN. = 4 MI.
1 IN. = 2 MI.

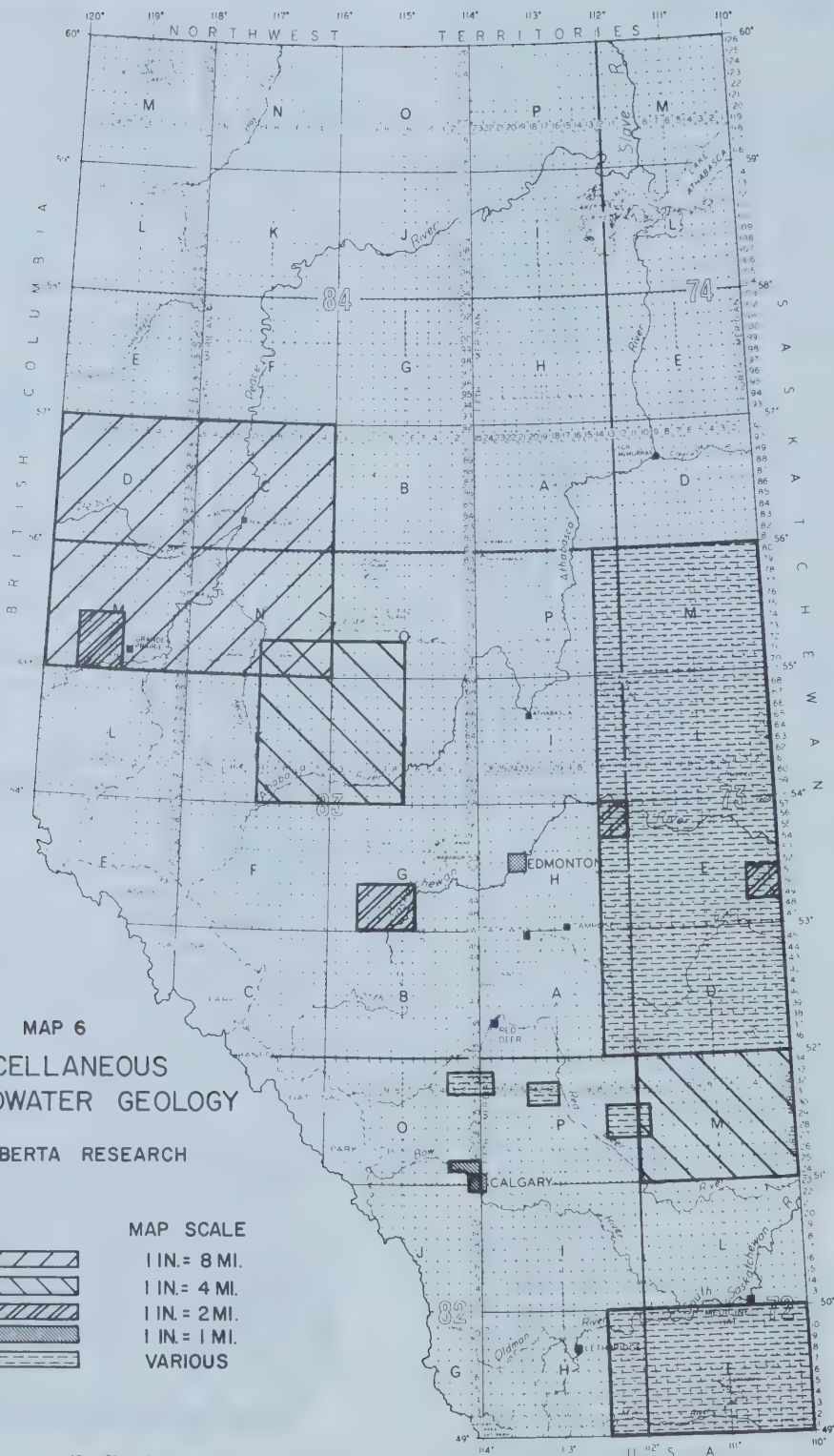
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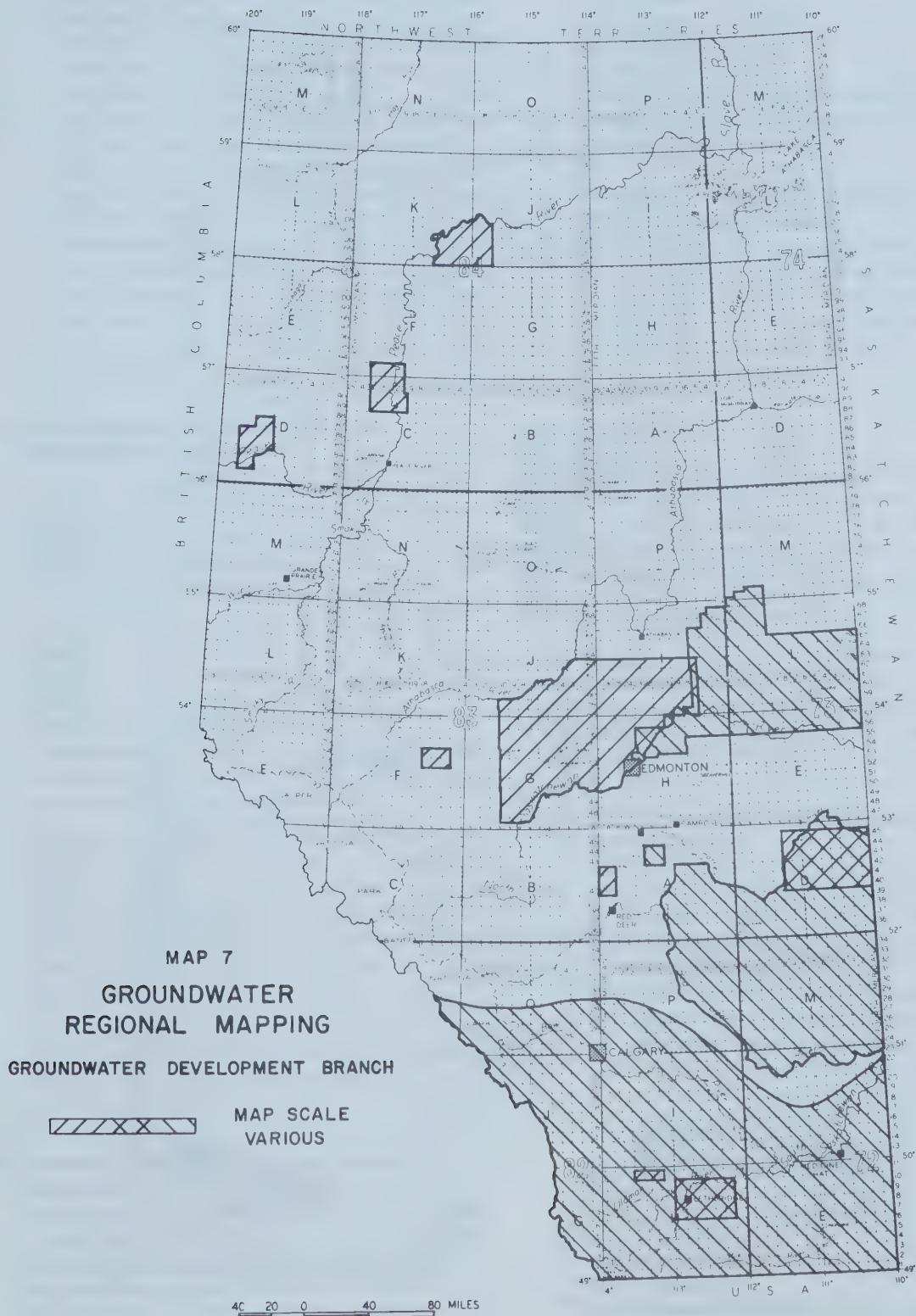


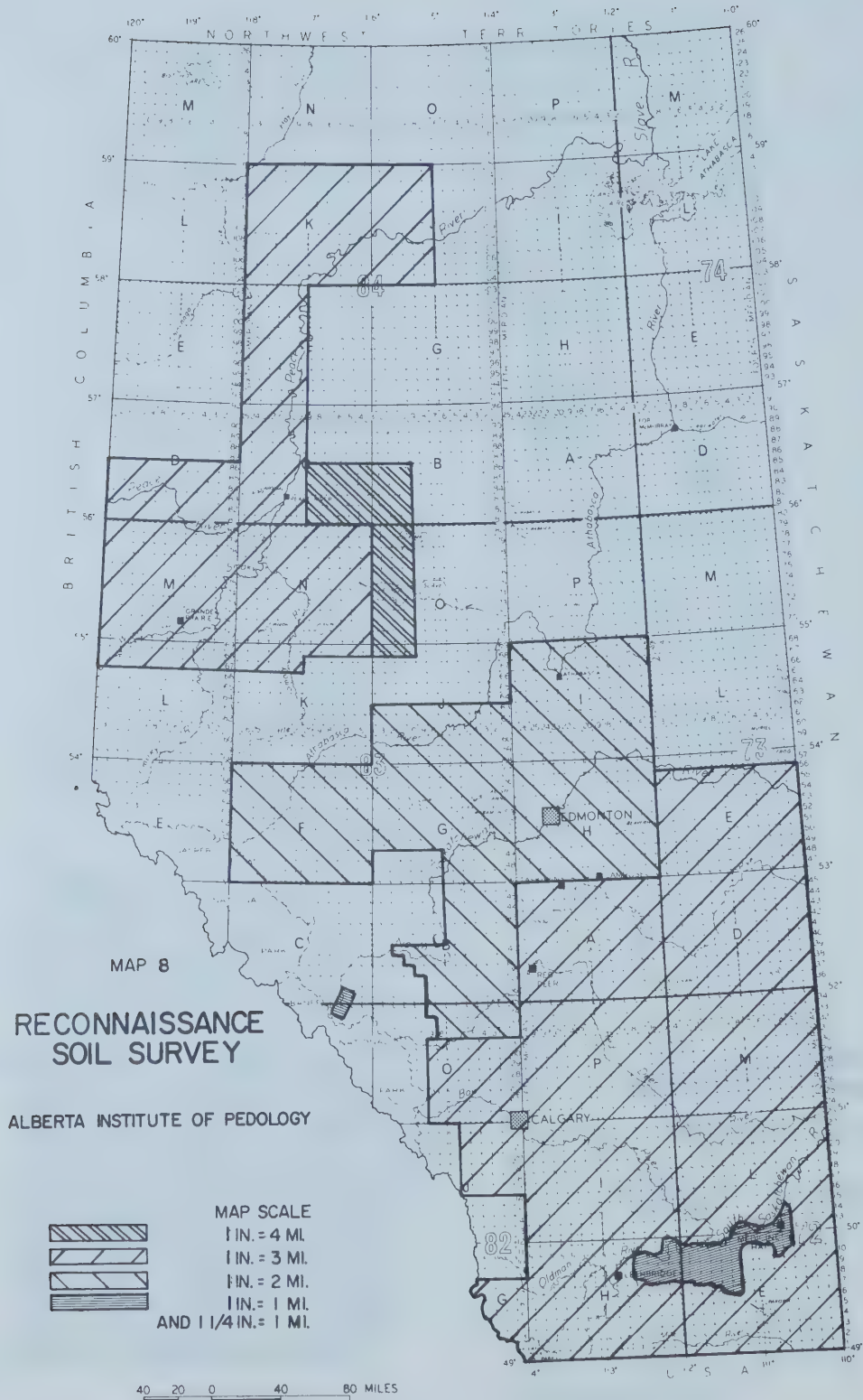
MAP 6
MISCELLANEOUS
GROUNDWATER GEOLOGY
ALBERTA RESEARCH



40 20 0 40 80 MILES







D. Detailed Soil Survey

Although detailed soil surveys have been prepared in Alberta for many years, more emphasis is presently being placed on this type of mapping as a result of increased demand for site specific or operations level information. The present program is largely restricted to urban development areas and provincial parks and includes coverage of approximately 60,000 acres per year (See Appendix 5). Mapping is carried out at scales between 1:5,000 and 1:12,000. Interpretations of soil suitability are usually included and are discussed in the appropriate section of this report. A limited number of copies of each report are produced; requests for this information should be directed to the Soils Division, Alberta Research.

2. Assessment Branch, Alberta Municipal Affairs

As part of the assessment of farmland for taxation purposes in Alberta, assessors survey the soils of each cultivated parcel. In accordance with the system used by the Alberta Institute of Pedology, the following parameters are inventoried:

Soil Group,
Depth,
Subsoil,
Texture,
Stoniness.

The information is recorded on Farmland Assessment sheets (See Appendix 6) to be used in the calculation of the assessed value of the land.

The Assessment Branch is responsible for assessments in Improvement Districts but in the Counties and Municipal Districts, assessment is a responsibility of the municipality. Access to the information must be gained through the agency responsible for assessment, because the assessment sheets are stored in the municipal offices.

The Assessment Branch, Alberta Municipal Affairs, is presently in the process of developing a computerized data processing system for the assessment of records.

3. Lands Division, Alberta Lands and Forests

In response to applications for disposition of Crown lands, the Lands Division carries out inspections of these lands. An Appraisal Report is prepared including a soil survey which is prepared in accordance with the system set out by the Alberta Institute of Pedology (See Appendix 7).

The following parameters are included in the soil survey:

Soil profile,
Great group,
Texture,
Stoniness.

This information is used to index on the STORIE Index System and is filed by legal description in Alberta Lands and Forests.

4. Federal Forestry Service, Environment Canada

At the present time, reconnaissance soil surveys for Banff and Jasper National Parks are being mapped at 1:50,000 for ultimate use in assessing soil limitations for various recreation forms (See "Soils" under "Interpretative Data").

Surface

I Topography

Topographical data is available for the entire province on the 1:250,000 National Topographic Survey Maps. The 1:50,000 series has not yet achieved full coverage of the province. The extent of coverage at this scale is indicated on Map 9.

II Hydrography

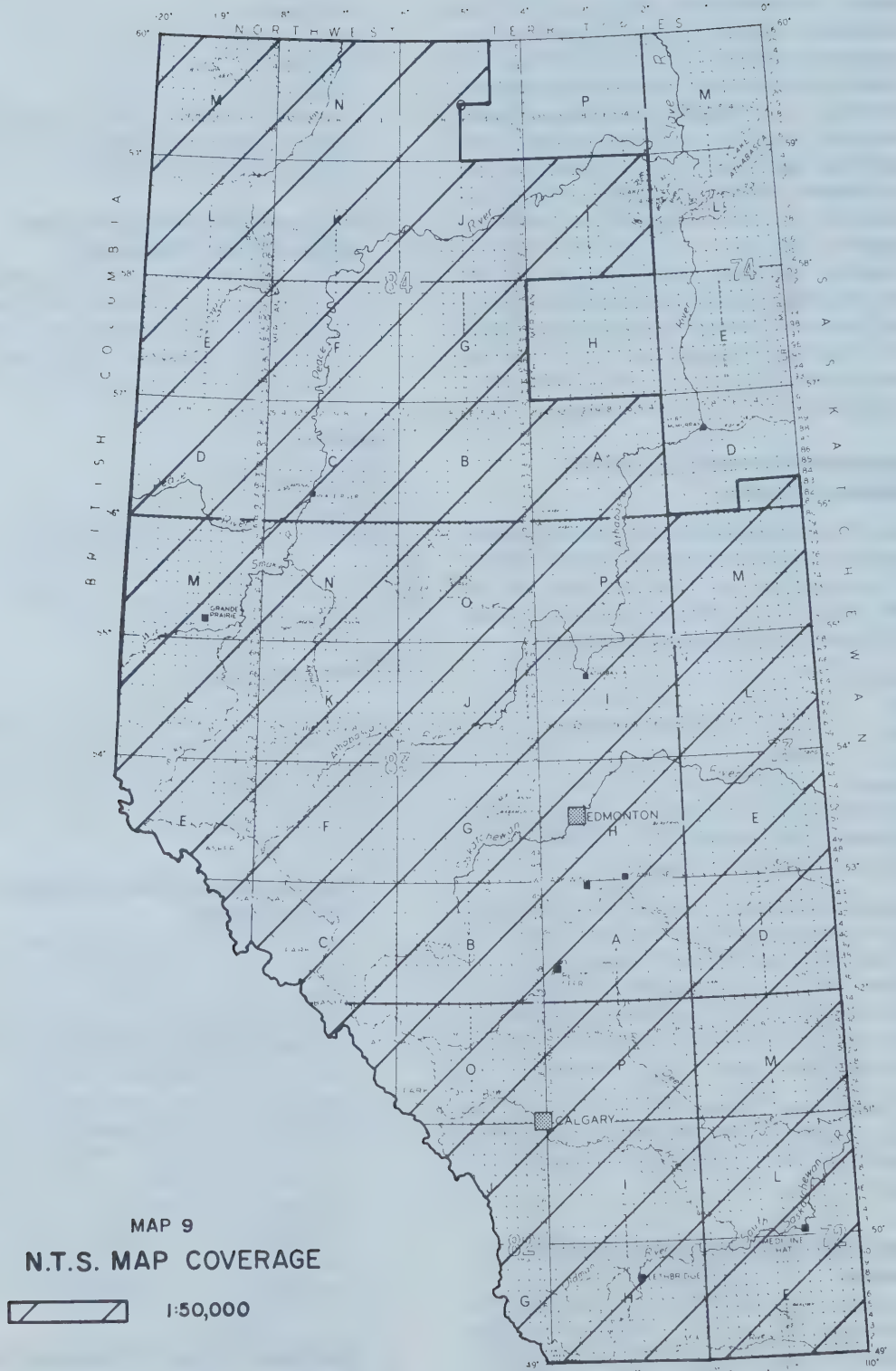
Hydrography is the branch of hydrology which examines surface waters. Hydrographic surveys examine such aspects of surface water as basin configuration and area, lake quality and quantity, water surface area, water levels, stream flow, and flood prediction.

1. Technical Services Division, Alberta Environment

The Technical Services Division examines, in detail, lake and stream water levels, stream flow, hydrographic lake surveys, and flooding. Most data at present are available in report and map form, although some stream flow and water level data has been computerized. Also available are daily observations, annual summaries and some statistical data. Because the work carried out in this Division is "project oriented" however, extent and scale of coverage is sporadic. Much information used here is obtained from the Water Survey of Canada. The Water Resources Management Division of Alberta Environment has on microfilm most of the information obtained by the Technical Services Division.

2. Pollution Control Division, Alberta Environment

The Water Pollution Branch of the Pollution Control Division gathers data through surface water



NOTE: 1:250,000 MAP COVERAGE IS AVAILABLE
FOR THE ENTIRE PROVINCE

and industrial effluent sampling methods. All information is computerized in the NAQUADAT bank (National Water Quality Data Bank - devised by Environment Canada for a national method of water data storage). The information is available for public use through the Water Pollution Branch.

3. Alberta Lands and Forests

Within this Department, the Fish and Wildlife Division and the Forest Land Use Branch each compile some hydrographic data. The latter agency examines precipitation storage through a gauge network. Seasonal precipitation data is collected from the gauges throughout the Rocky Mountains Forest Reserve. This information is used in conjunction with snow course measurements for streamflow prediction, and is available in the form of computer print-outs (yearly data, long-term averages, and precipitation zone maps). The Fish and Wildlife Division examines most aspects of hydrography on a special survey basis, none of which is computerized.

4. Water Resources Branch, Inland Waters Directorate, Environment Canada

As of December 31, 1972, Alberta had 426 active hydrometric gauging stations, 351 of which recorded flow data, with the remaining 75 recording water levels only. Daily discharges and daily water levels are published annually in the "Surface Water Data" series, and a "Surface Water Data Reference Index" is also published annually. A third publication is the "Historical Streamflow Summary" which contains monthly and annual discharges, the annual maximum and minimum daily discharges, annual maximum instantaneous discharges, and annual total discharges in acre-feet (See Appendix 8). The summary, updated every five years, presents the data to 1970 in the first issue. Daily water levels, maximum instantaneous discharges, and water levels are expected to be made available on magnetic tape (as are the daily discharge data at present) in the near future.

5. Water Quality Branch, Inland Waters Directorate, Environment Canada

The Water Quality Branch of Environment Canada has developed the NAQUADAT system. This system contains a large amount of water quality data that are relevant in both the regional and management levels including chemical, physical, bacteriological, biological, and hydrometric analyses for surface water, groundwater, waste water, and sediments. NAQUADAT offers waste quality data listings, a water quality data summ-

ary, and nutrient loading data. A "Water Quality Dictionary" giving the coding system and respective parameter code numbers, and a regional "Index of National Water Quality Network Stations" are also available from the Branch.

6. Sediment Survey Section, Applied Hydrology Division, Inland Waters Directorate, Environment Canada

Sediment surveys have been undertaken by the Sediment Survey Section of Environment Canada since 1961. At present, 35 sediment stations exist in Alberta, which are located at or near existing hydrometric stations. The objectives of the survey are to collect and publish long-term basic sediment records, determine the relationship between sediment transport and aspects of hydrology and geomorphology, and complement the hydrometric survey program. Results are published by the Water Survey of Canada in the annual "Sediment Data for Canadian Rivers" series, currently available for the years 1965 through 1969 (See Appendix 9).

III Flora

1. Alberta Forest Service, Alberta Lands and Forests

A. Alberta Forest Inventory

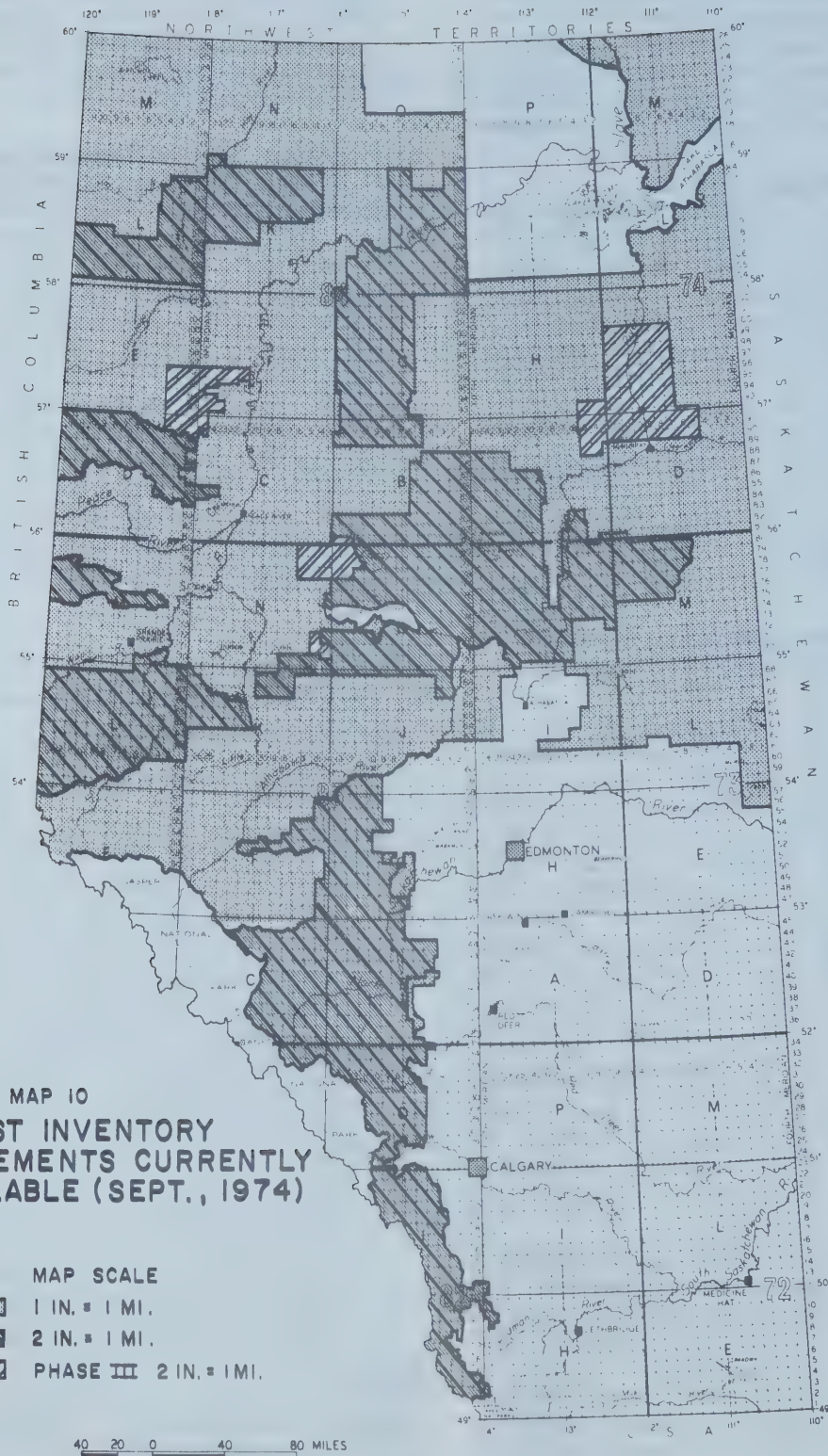
The Alberta Forest Inventory defines and measures the extent of the province's forest resources. In that the inventory includes both baseline and interpretative data, this section will be confined to discussing the general description and the baseline components.

Using aerial photography, forest areas are classified as productive, potentially productive or non-productive. Productive land is then classified as to density, height, tree species composition and age. This information and several interpretative parameters are transferred to forest cover maps.

Approximately 150,000 square miles of Alberta is covered by the provincial forest inventory. Three levels of forest inventory are currently used - broad, detailed and Phase III (very detailed). The map scale and mapping intensities are as follows (See Map 10):

MAPS

Type of Inventory	Basic Map Scale	Minimum Acreage of Mapping Detail
Broad (I)	1 inch = 1 mile	160
Detailed (II)	2 or 4 inches = 1 mile	40
Phase III (very detailed)	2 inches = 1 mile	10 to 40



As a component of the Alberta Forest Inventory, forest type maps show stand perimeters and descriptive symbols (compiled from recent aerial photography at 1 inch to 1760 feet). Information is mapped by management unit with the intention of providing coverage for the whole Green Zone. Maps are prepared at a scale of 1 inch to 2640 feet with minimum stand size ranging from 5 to 40 acres (See Appendix 10).

B. Range Condition

Within the Rocky Mountains Forest Reserve are located some 102 range allotments. Of these, 58 allotments have within them a 4 to 5 acre fenced parcel referred to as a range enclosure. Periodically, 100 foot transects are measured in and outside the enclosures. At one foot intervals, the plant community type, or type of surface is recorded. In this manner, plant community changes both within and outside the enclosure are monitored giving rise to range conditions of grazed and ungrazed lands in the Forest Reserve (See Appendix 10). Reports are available to the public through Alberta Forest Service Divisional Offices, and from Alberta Lands and Forests.

Lands Division, Alberta Lands and Forests

A. Forage Inventory

Lands Division conducts a range survey program for all Crown lands in the settled portions of the province. The survey is to obtain an inventory of the amount and type of available forage for use in more accurately establishing carrying capacities and in the identification of problem areas. To date, the program has been concentrated on the native range of southern Alberta but the survey will progress northward in the future. All survey information is maintained on files at Alberta Lands and Forests.

Lands Division is also establishing "Bench Marks" on Public Lands for guidance in settling carrying capacities. The following information is gathered on a quarter section basis:

1. Quantity of available forage
2. Vegetative composition,
3. Estimate of range condition,
4. Physical characteristics of the site.

Information on all bench mark sites is available from the library of Alberta Lands and Forests.

IV Fauna

1. Fish and Wildlife Division, Alberta Lands and Forests

A. Population Census

Population censuses are conducted annually for all big game species, waterfowl and upland birds on a province-wide basis. These surveys vary in intensity depending on the need for the information. Population counts, reproduction and mortality rates are usually included in the data base. Maps and/or tables are used to present the information with the scale of mapping dependent on user need and intensity of survey.

B. Critical and Key Wildlife Areas

A provincial inventory of critical and key wildlife areas is presently under way. Mapping at a scale of 1:250,000 has been completed for the whole province. The present program involves mapping at a scale of 1:50,000 for ungulate and waterfowl habitat. Maps are available from either the Technical Division or the Fish and Wildlife Division, Alberta Lands and Forests.

C. Harvest Information

Periodically, samples of big game hunters are chosen to answer questionnaires regarding game harvests. As well, all fur returns from trap-line areas are summarized annually.

D. Lakes and Streams Fisheries

The regional fisheries biologists conduct an ongoing but unscheduled program of lake and stream fishery inventories. Detailed information is gathered, including the following:

Hydrography,
Flow measurements,
Water chemistry,
Fish sampling.

The information is compiled in either data sheets or reports. In addition, the Fish and Wildlife Division has established a series of 1300 lake files into which all biophysical data is placed.

Atmospheric

I Climate

1. Ministry of Transport, Government of Canada

Most meteorological data are available through the Canadian Ministry of Transport. The actual technical data received by the Ministry, however, is supplied by the Atmospheric Environment Service (the Alberta Center is in Edmonton). Informa-

tion compiled includes daily temperature and precipitation records, monthly and annual means, frost free days, sunshine hours and wind data. Each meteorological station in Alberta supplies the Service with the required information (See Appendix 11), which is then compiled for daily report and records. All data are readily available through the Service in the form of magnetic tape, computer print-outs, and microfilm.

2. Forest Protection Branch, Alberta Lands and Forests

Weather data including information such as temperature, relative humidity, visibility, cloud cover, precipitation, wind speed and wind direction are gathered by this Branch. These are utilized in the formation of a weather synopsis for the province. Conditions are reported twice daily from selected forestry and lookout stations throughout the forest protection zone from April through October. The information is available in the form of computer print-outs, with some additional information available in map form.

II Air Quality

1. Pollution Control Division, Alberta Environment

For both Edmonton and Calgary, pollution indexes are reported daily, with records eventually being compiled in a monthly report by the Pollution Control Division. From these, annual reports are also compiled. Other information supplied by Pollution Control includes monthly reports from sour gas industries (available through Alberta Environment Library), and a yearly publication of the Emissions Source Inventory. Information is available in publication form, or computer print-outs.

Comprehensive Biophysical

1. Provincial Parks Division, Alberta Lands and Forests

The Provincial Parks Division is conducting a program of comprehensive biophysical inventory for each of Alberta's Provincial Parks. This information is not to be confused with an integrated biophysical inventory but is a survey of those biophysical factors relevant to parks management. The surveys use vegetative communities as the base inventory unit and include the following parameters:

Geology,
Soils (Type, Texture, Depth),
Flora,
Fauna,
Climate (regional).

Mapping is prepared at a scale of 1 inch = 200 feet and, with the data sheets, is included in a report for each provincial park. The reports are prepared in limited quantities mainly for use within the Provincial Parks Division.

INTERPRETATIVE DATA

Subsurface

I Multi-Factor Interpretations

A contract from Alberta Environment has recently been awarded to Dr. L. A. Bayrock of Bayrock Surficial Geology Ltd., to examine through photo interpretation and field research, the surficial geology of the Foothills Region of the province. From this data and surface slope mapping, Dr. Bayrock will derive a series of erosion hazard maps of the area. Appendix 12 illustrates the area to be covered in this study.

Dr. R. A. McPherson of Quaternary Geosciences Ltd. has been contracted by Alberta Research for Alberta Mines and Minerals to examine the following parameters in the area of the Alberta Oil Sands where surface mining is considered feasible:

- (i) lithology,
- (ii) topography,
- (iii) slope stability,
- (iv) susceptibility to erosion,
- (v) general construction conditions,
- (vi) suitability for waste disposal,
- (vii) groundwater potential,
- (viii) mineral resources,
- (ix) chemical composition, and
- (x) revegetation characteristics.

Area coverage will include 1:50,000 N.T.S. map sheets

74 E/3

74 E/4

74 E/5

74 E/6

74 E/7 (north half), and

74 D/14 (north half).

II Groundwater Probability

1. Alberta Research

Almost all interpretative information pertaining to groundwater has been the result of study by Alberta Research. As well as the baseline information, which is depicted on the Hydrogeological Map Series, Groundwater Probability is indicated. The probability, in certain instances, is established from pump or bail tests; in other cases, it is estimated from flow regime, lithology, and other pertinent parametric data. Groundwater probability is also indicated by formation through depth. Both the 1:250,000 published maps, and the 1:50,000

working base maps are available through Alberta Research (the latter to be used within the confines of the building). Refer to Maps 5 and 6 for the extent and scale of coverage in Alberta.

III Soils

1. Soils Division, Alberta Research

As discussed in the Baseline section of this report, the Soils Division carries out detailed soil surveys at scales of between 1:5,000 and 1:12,000. Numerous interpretations of soil suitability are possible depending on the needs of the data user. The present program of detailed mapping for urban development areas and provincial parks includes interpretations of soil suitability for topsoil, lagoons, reservoirs, concrete corrosion hazard and agricultural capability.

2. Soils Branch, Earth Sciences and Licensing Division, Alberta Environment

Three major studies have been completed in central and southern Alberta (See Appendix 13). The objectives of all three studies (Sturgeon River Basin, Red Deer River Project, and South Saskatchewan River Basin) were to sample specific soil types, and to characterize physical and chemical properties pertinent to the irrigation capability of that particular soil. The South Saskatchewan River Basin Study was prepared as part of a resource inventory, and is generally less detailed than the Sturgeon and Red Deer River Projects. All three studies vary in scale, although the scale within each study is consistent. These reports and others, several of which are included as part of Appendix 13, are available through the Earth Sciences and Licensing Division.

3. Federal Forestry Service, Environment Canada

An assessment of soil limitations for recreation was completed in Waterton Lakes National Park by the Federal Forestry Service in conjunction with the Canada Department of Agriculture. The map and report are presently in a semi-published form, and available through the Alberta Institute of Pedology. Interpretative mapping of soils for recreation is now under way for Banff and Jasper National Parks by the Federal Forestry Service in a six year program.

Surface

I Hydrography

1. Applied Hydrology Division, Inland Waters Directorate, Environment Canada

The Applied Hydrology Division of Environment Canada is presently developing a data bank refer-

red to as the Hydrologic Square Grid Data System. The reference system utilizes a 10 km. x 10 km. grid in Alberta (See Appendix 14). The data storage component consists of physiographic data stored in each square, supplemented by meteorologic and hydrologic data. The data processing component results in the computation of "derived" or interpretative physiographic characteristics (slopes, barrier heights, etc.), statistics, and analyses of meteorologic and hydrologic data (long-term, annual, monthly and daily means). Because this system is only in the development stage, however, most information is not readily available, and extraction could require a considerable amount of time and effort.

II Flora

1. Alberta Forest Service, Alberta Lands and Forests

A. Land Capability for Forestry (C.L.I.)

For this program an interpretative rating system is used for the classification of land into one of seven productivity classes based on inherent ability to grow commercial timber. These maps have been prepared for all lands within the original Canada Land Inventory (C.L.I.) agreement area except for those map sheets in southeastern Alberta which are generally devoid of forest cover (See Map 12). The remaining portion of Northern Alberta is to be mapped within four years.

This inventory is highly dependent on the availability of baseline biophysical information. The following parameters are considered essential in determining productive forest capacity:

Landforms,
Parent Material,
Soils,
Fertility,
Moisture,
Climate,
Vegetation.

In many cases, this information was not available from traditional sources. As a result, much of the basic information was inventoried by those doing the Forest Capability Inventory and assimilated into the classification system.

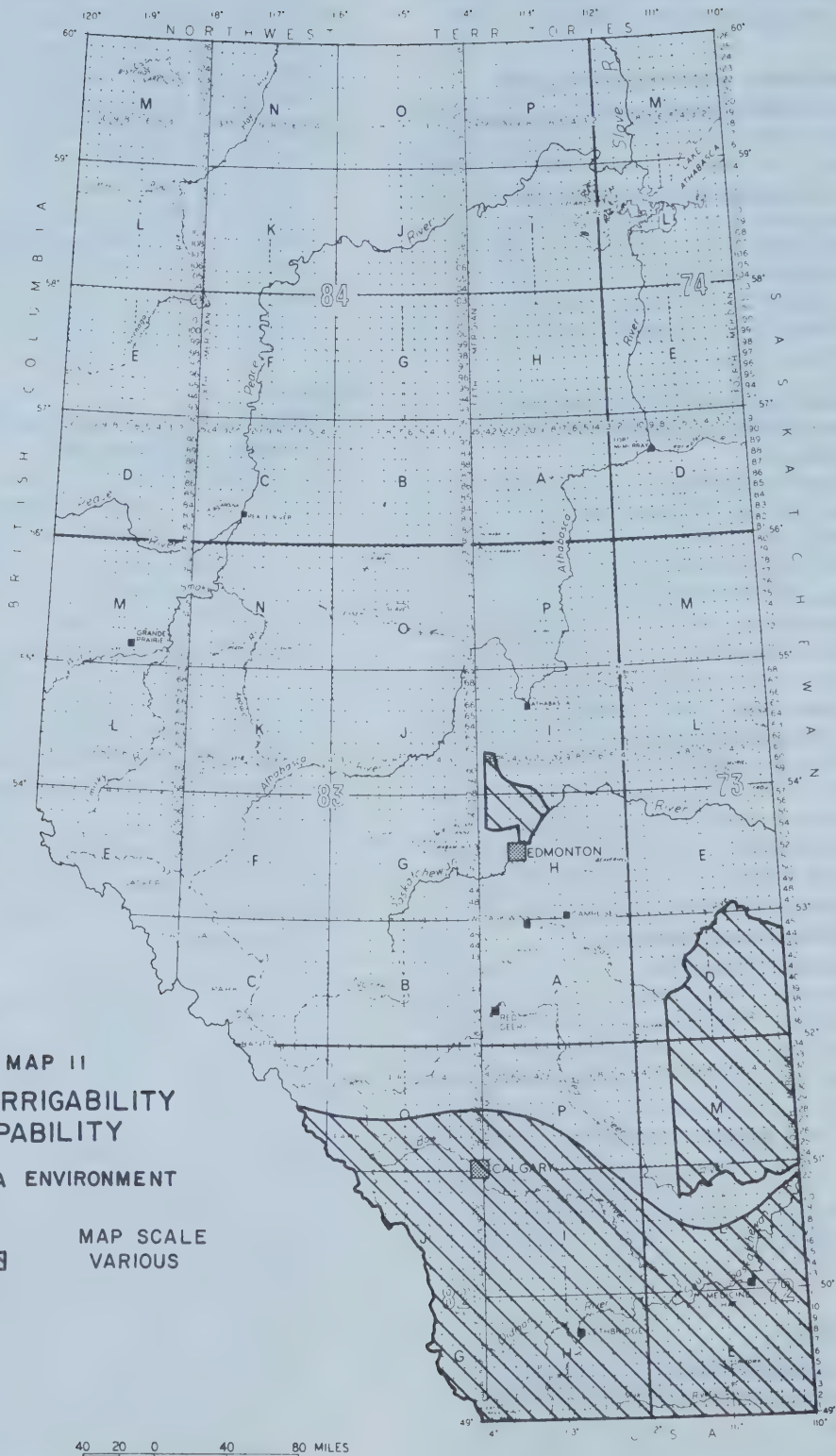
Land Capability for Forestry maps are produced at scales of 1:50,000 or 1:63,360 and 1:250,000. Ozalid prints of both scales are available from the Technical Division, Alberta Lands and Forests. Environment Canada published a color lithographed version of the

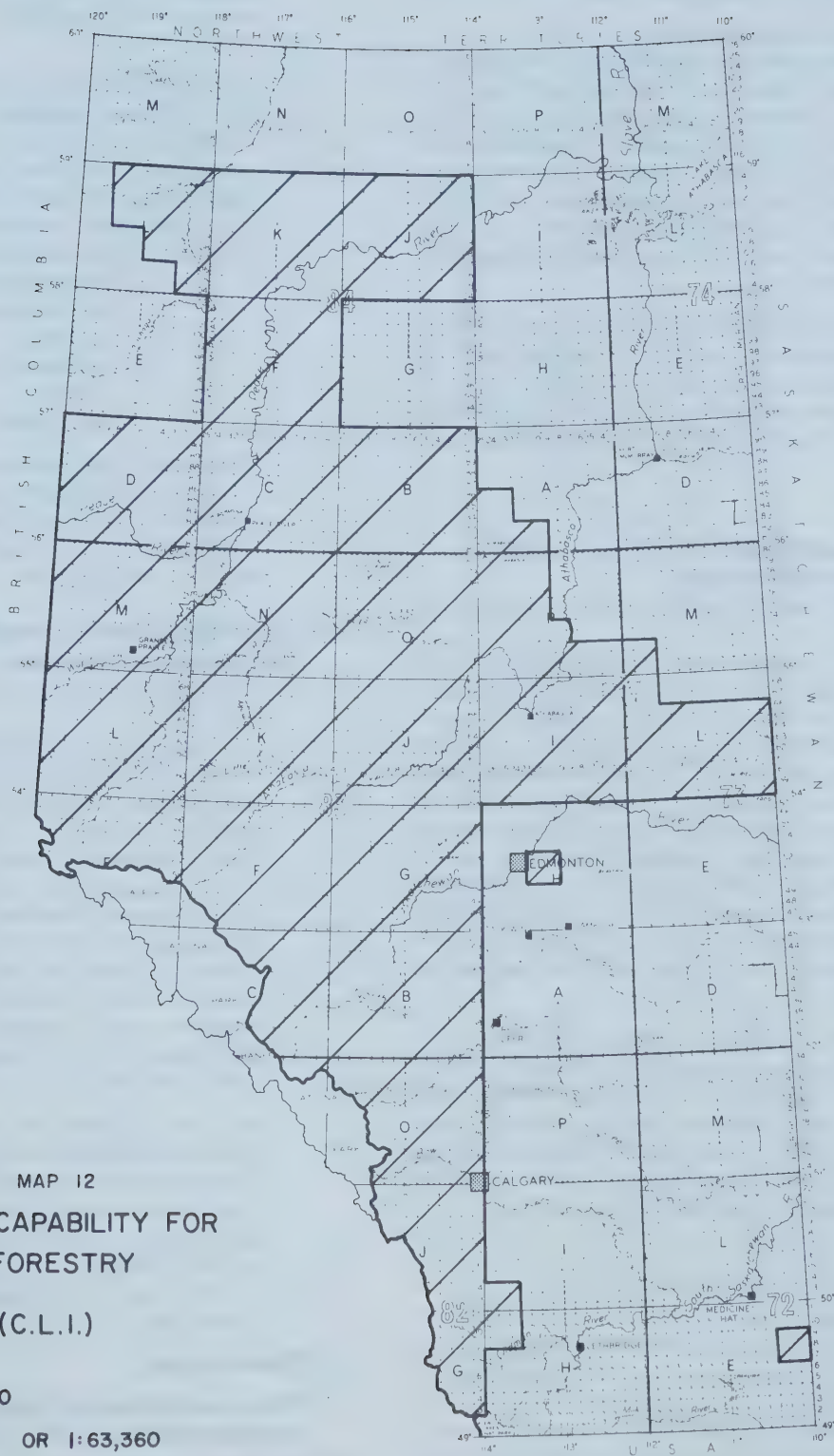
MAP II
SOIL IRRIGABILITY
CAPABILITY
ALBERTA ENVIRONMENT



MAP SCALE
VARIOUS

40 20 0 40 80 MILES





1:250,000 series for map sheets within the original C.L.I. agreement area.

B. Alberta Forest Inventory

Initially, lands are classified as productive, potentially productive or non-productive providing a general interpretation of forest productivity. For productive lands, interpretations are made for growth potential and merchantability. This information is all transferred to Forest Cover maps at scales of 1 inch to 1 mile or 2 inches to 1 mile (see Baseline Flora section).

Volume and stem frequency information is prepared and applied to the stand areas as set out on the Forest Type maps. Volume tables are prepared by grouped management units and are available on computer listings.

III Fauna

1. Fish and Wildlife Division, Alberta Lands and Forests

A. Land Capability for Wildlife - Ungulates (C.L.I.)

This program utilizes an interpretative land classification system for the classification of land into one of seven capability classes based on the quality and quantity of food and cover available to ungulate wildlife. Special classes identify those areas with particular suitability for winter range. The coverage of this inventory is indicated on Map 13. Included is all of the original C.L.I. agreement area and much of Northern Alberta undertaken in the past 3 years. The remaining portion of Northern Alberta will be completed by 1976.

Land Capability for Wildlife - Ungulates maps are produced at scales of 1:50,000 or 1:250,000. Ozalid prints of both scales are available from the Technical Division, Alberta Lands and Forests. Environment Canada publishes a color lithographed version of the 1:250,000 series for coverage within the original C.L.I. area.

B. Wildlife Habitat Restrictions

Wildlife is managed on a basis utilizing 148 Wildlife Management Units (W.M.U.) giving total provincial coverage, with the exception of National Parks, Indian Reserves, Metis Settlements, and major cities. Information on harvest and determination of limiting factors, particularly habitat and weather restrictions, are being assembled on the basis of a W.M.U.

Trapping areas are assigned to registered trappers on Crown lands for the purpose of furbearer management.

C. Sport Fish Capability (C.L.I.)

This program utilizes an interpretative classification system to classify bodies of water into one of four classes based on the capability of the water body to support sport fish. Some of the important factors on which the classification is based are:

Oxygen occurrence,
Morphometry,
Nutrients,
Temperature,
Turbidity,
Limitations to use.

Coverage of this inventory is indicated on Map 14. Maps are prepared at a scale of 1:250,000 and are available from the Technical Division, Alberta Lands and Forests. An accompanying report is also prepared.

2. Canadian Wildlife Service, Environment Canada

A. Land Capability for Wildlife - Waterfowl (C.L.I.)

An interpretative classification system is used in this program to classify land and water into one of seven capability classes based on its ability to support or produce waterfowl. Special classes identify those areas which serve as important migration stops and/or wintering areas. The area included in the original C.L.I. agreement has been mapped at scales of 1:50,000 or 1:63,350 and 1:250,000. The remaining Northern areas have been mapped only at a scale of 1:250,000. Complete provincial coverage will be available by 1975 (See Map 15).

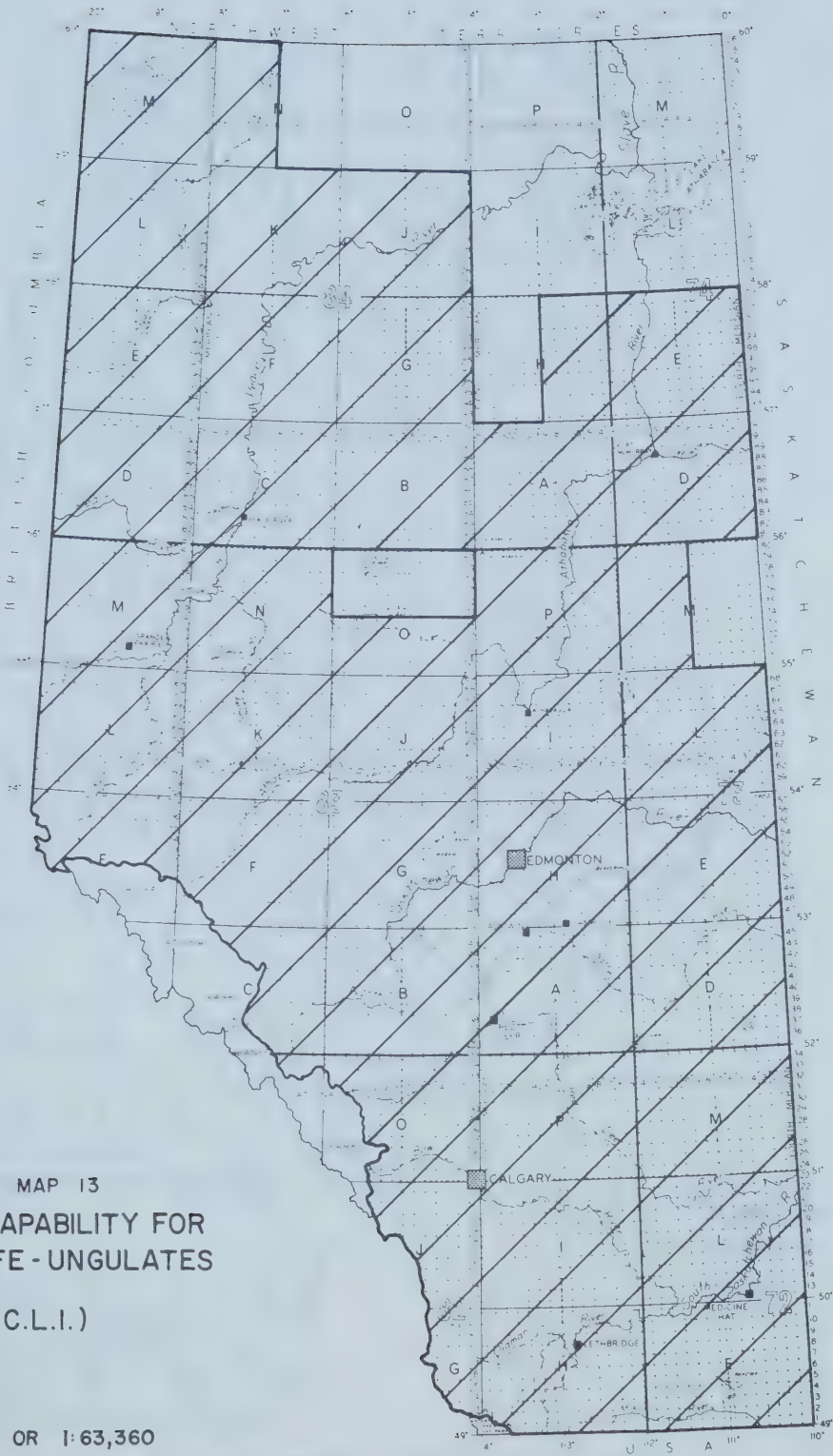
All Land Capability for Wildlife - Waterfowl maps are available from the Technical Division, Alberta Lands and Forests. Environment Canada publishes a color lithographed version of the 1:250,000 series for map sheets within the original C.L.I. agreement. That agency has also now completed a 1:1,000,000 composite map for Alberta.

IV Recreation

1. Provincial Parks Division, Alberta Lands and Forests

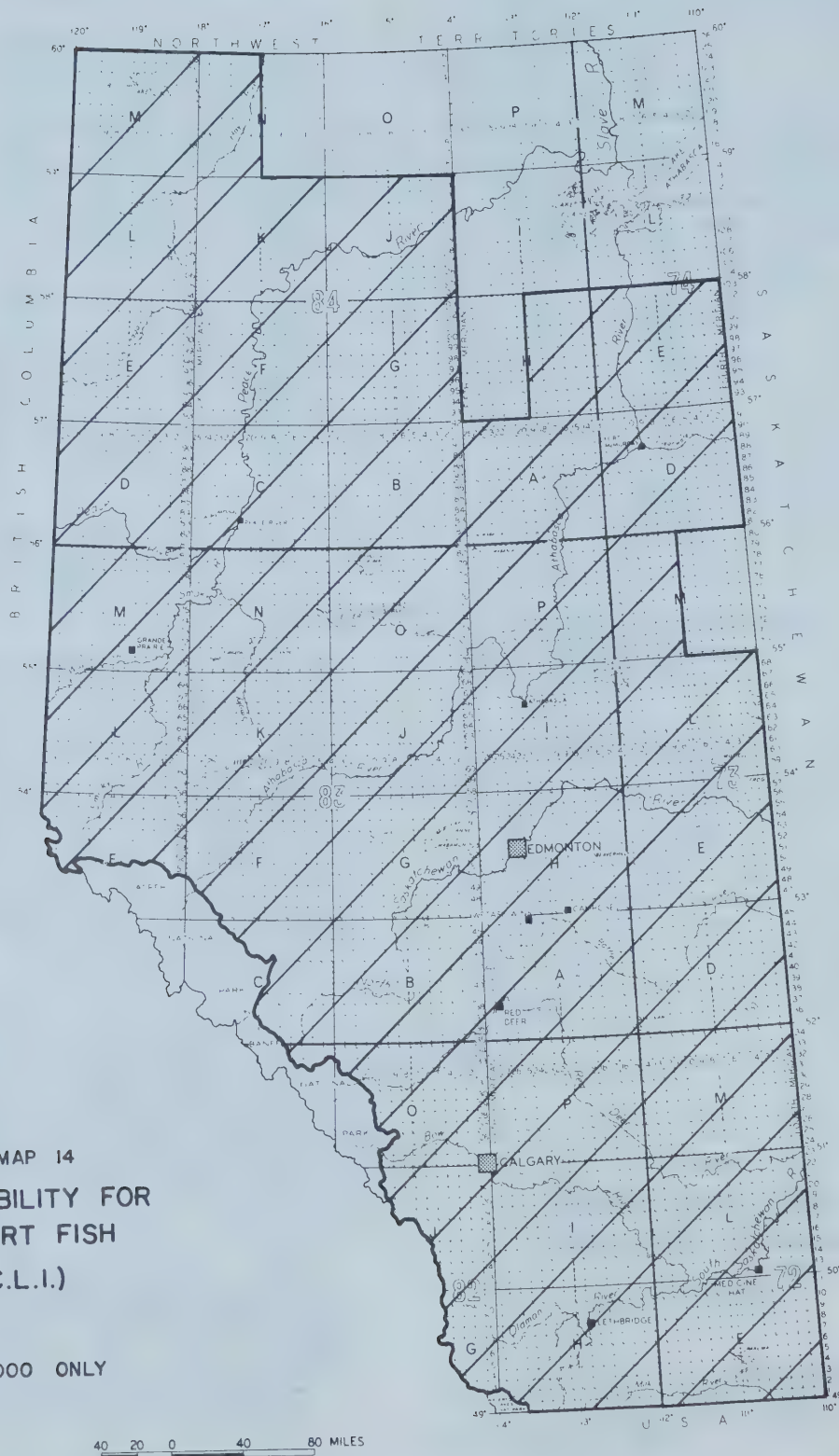
A. Land Capability for Outdoor Recreation (C.L.I.)

This program utilizes an interpretative land



MAP 14
CAPABILITY FOR
SPORT FISH
(C.L.I.)

1:250,000 ONLY

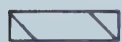


MAP 15
LAND CAPABILITY FOR
WILDLIFE - WATERFOWL

(C.L.I.)

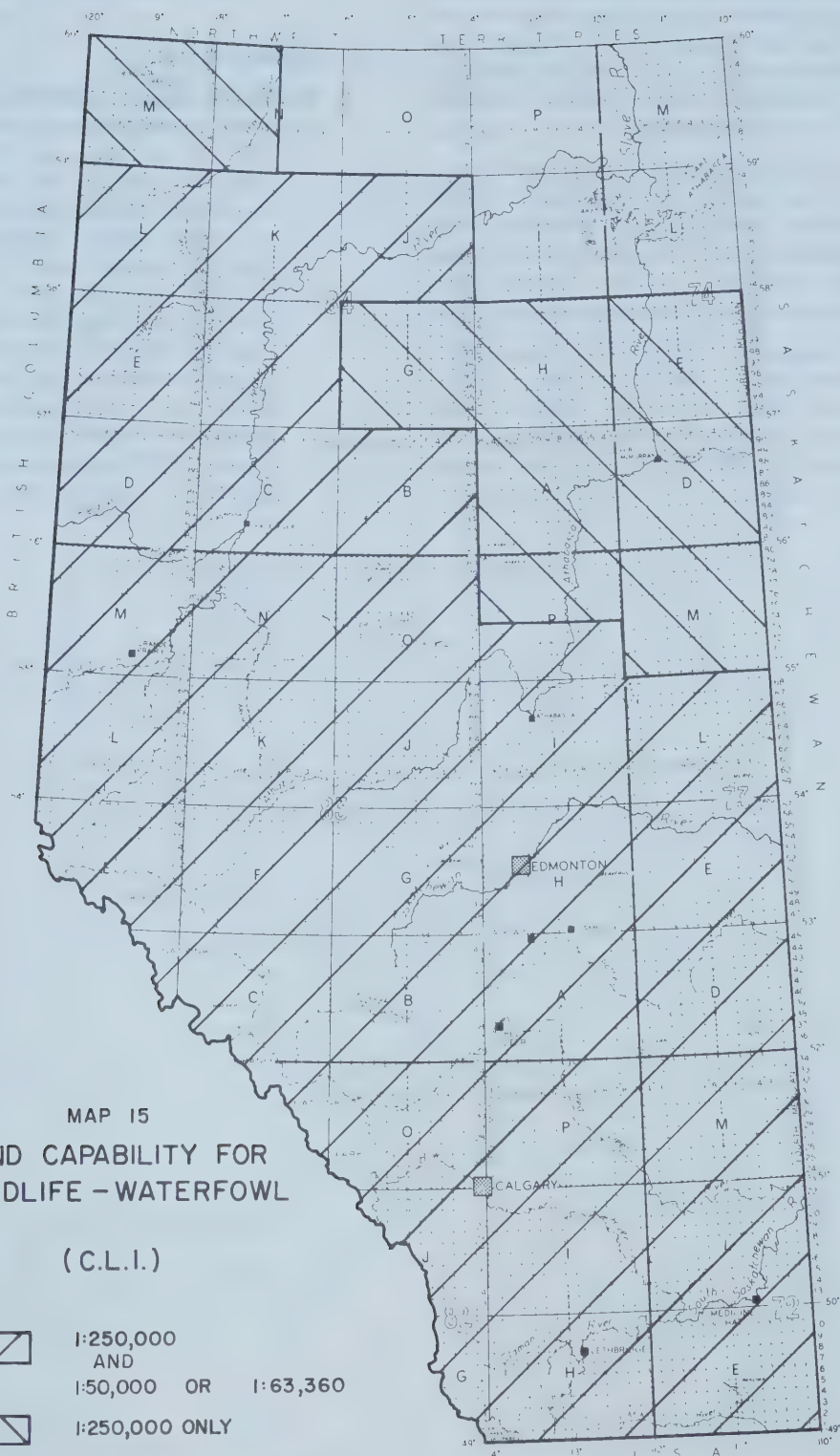


1:250,000
AND
1:50,000 OR 1:63,360



1:250,000 ONLY

40 20 0 40 80 MILES



classification system for the classification of land into one of seven classes based on the relative quantity of recreation which can be generated and sustained on a land unit. The classification system also provides an indication of the features or activities which form the basis of the classification.

The inventory provides coverage of the original C.L.I. agreement area and much of Northern Alberta (See Map 16). The program will be completed in 1976. It should be noted as particularly important for this inventory, that coverage does not include the National Parks.

Land Capability for Outdoor Recreation maps are produced at scales of 1:50,000 or 1:63,360 and 1:250,000. Ozalid prints of both scales are available from the Technical Division, Alberta Lands and Forests. Environment Canada publishes a color lithographed ver-

sion of the 1:250,000 series for map sheets within the original C.L.I. agreement area.

V. Agriculture

1. Soils Division, Alberta Research

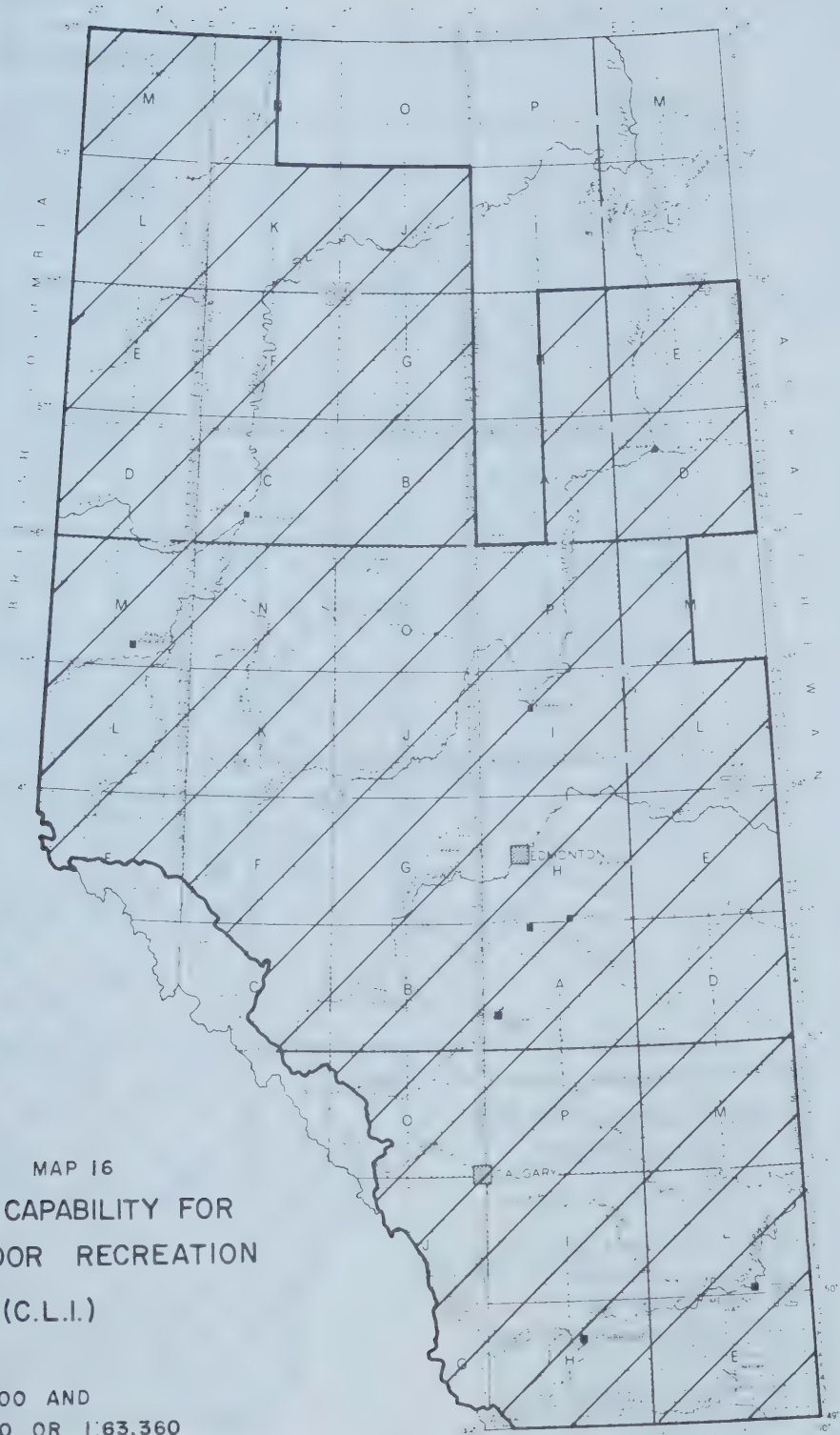
A. Soil Capability for Agriculture (C.L.I.)

For this program, an interpretative rating system is used for the classification of land into one of seven productivity classes based on inherent ability to grow crops. This inventory is highly dependent on the availability of soil survey information. The extent of coverage and mapping scales used are indicated on Map 17. Ozalid prints of all maps are available from the Technical Division, Alberta Lands and Forests. Environment Canada publishes a color lithographed version of those 1:250,000 map sheets included in the original C.L.I. agreement.

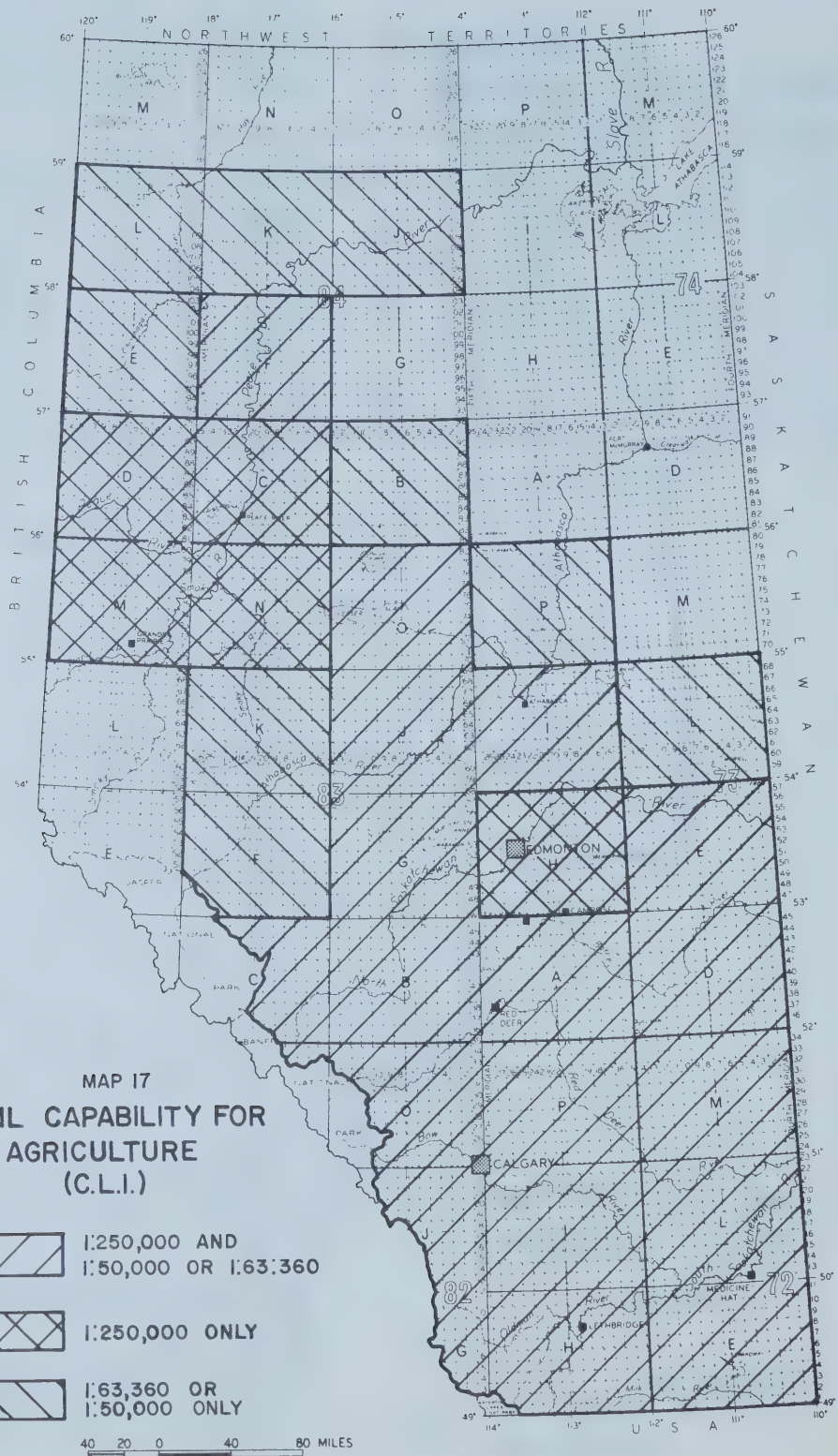
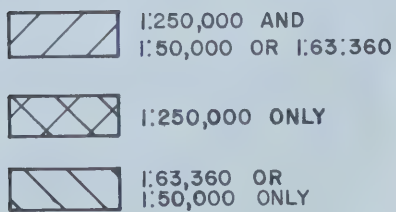
MAP 16
LAND CAPABILITY FOR
OUTDOOR RECREATION
(C.L.I.)

1:250,000 AND
1:50,000 OR 1:63,360

40 20 0 40 80 MILES



MAP 17
SOIL CAPABILITY FOR
AGRICULTURE
(C.L.I.)



ADDRESSES FOR ENQUIRIES

Government of Alberta

I Energy Resources Conservation Board

1. Energy Resources Conservation Board,
603 Sixth Avenue, S.W.,
Calgary, Alberta.
T2P 0T4
Telephone: (403) 261-8311

or

Energy Resources Conservation Board,
14505 - 123 Avenue,
Edmonton, Alberta,
T5L 4J6
Telephone: (403) 454-9502

Data Type

Baseline:

Bedrock Geology

II Alberta Environment

1. Groundwater Development Branch,
Earth Sciences and Licensing Division,
Alberta Environment,
Milner Building,
10040 - 104 Street,
Edmonton, Alberta.
T5J 0Z6
Telephone: (403) 425-1130

Baseline:

Hydrogeology

2. Soils Branch,
Earth Sciences and Licensing Division,
Alberta Environment,
Milner Building,
10040 - 104 Street
Edmonton, Alberta
T5J 0Z6
Telephone: (403) 425-1130

Interpretative:

Soil Irrigability

3. Air Pollution Branch,
Pollution Control Division,
Alberta Environment,
Milner Building,
10040 - 104 Street,
Edmonton, Alberta,
T5J 0Z6
Telephone: (403) 425-1130

Baseline:

Air Quality

4. Water Pollution Branch,
Pollution Control Division,
Alberta Environment,
Milner Building
10040 - 104 Street,
Edmonton, Alberta.
T5J 0Z6
Telephone: (403) 425-1130

Baseline:

Water Quality

5. Technical Services Division,
Alberta Environment,
100th Avenue Building,
10405 - 100 Avenue,
Edmonton, Alberta.
T5J 0Z6
Telephone: (403) 425-1130

Baseline:
Hydrography

III Alberta Industry and Commerce

1. Alberta Research,
Alberta Industry and Commerce,
11315 - 87 Avenue,
Edmonton, Alberta.
T6G 2C2
Telephone: (403) 433-6421

Baseline: Bedrock Geology
Surficial and Glacial
Geology
Hydrogeology
Soils
Interpretative: Hydrogeology
Soils

IV Alberta Lands and Forests

1. Alberta Forest Service,
Alberta Lands and Forests,
Natural Resources Building,
9833 - 109 Street,
Edmonton, Alberta.
T5K 2E1
Telephone: (403) 229-3458
2. Forest Land Use Branch,
Alberta Forest Service,
Alberta Lands and Forests,
Natural Resources Building,
9833 - 109 Street,
Edmonton, Alberta.
T5K 2E1
Telephone: (403) 229-3185
3. Forest Protection Branch,
Alberta Forest Service,
Alberta Lands and Forests,
Natural Resources Building,
9833 - 109 Street,
Edmonton, Alberta.
T5K 2E1
Telephone: (403) 229-3428
4. Fish and Wildlife Division,
Alberta Lands and Forests,
Natural Resources Building,
9833 - 109 Street,
Edmonton, Alberta.
T5K 2E1
Telephone: (403) 229-4421
5. Lands Division,
Alberta Lands and Forests,
Natural Resources Building,
9833 - 109 Street,
Edmonton, Alberta,
T5K 2E1
(403) 229-3378

Baseline:
Forest Cover
Interpretative:
Forestry

Baseline:
Hydrography

Baseline:
Climate

Baseline:
Hydrography
Fauna
Interpretative:
Fauna

Baseline:
Soils
Flora

6. Provincial Parks Division,
Alberta Lands and Forests,
Natural Resources Building,
9833 - 109 Street,
Edmonton, Alberta.
T5K 2E1
Telephone: (403) 229-3073

Comprehensive
Biophysical

V Alberta Municipal Affairs

1. Assessment Branch,
Alberta Municipal Affairs,
Municipal Affairs Building,
10363 - 108 Street,
Edmonton, Alberta.
T5J 1L8
Telephone: (403) 429-7136

Baseline:
Soils

Government of Canada

I Canada Department of Agriculture

1. Canada Department of Agriculture,
Sir John Carling Building,
Carling Avenue,
Ottawa, Ontario.
K1A 0C5
Telephone: (613) 994-5533

Baseline:
Soils

II Department of Energy, Mines and Resources

1. Geological Survey of Canada,
Department of Energy, Mines and Resources,
601 Booth Street,
Ottawa, Ontario.
K1A 0E8
Telephone: (613) 994-5003

or

Institute of Sedimentary And
Petroleum Geology,
3303 - 33 Street, N.W.,
Calgary, Alberta.
T2L 2A7
Telephone: (403) 284-0110

Baseline:
Bedrock Geology
Surficial and Glacial
Geology

III Environment Canada

1. Atmospheric Environment Service,
Environment Canada,
10225 - 100 Avenue,
Edmonton, Alberta,
T5J 0A1
Telephone: (403) 425-5640
2. Canadian Wildlife Service,
10025 - Jasper Avenue,
Edmonton, Alberta.
T5J 1S6
Telephone: (403) 425-6860

Baseline:
Climate

Interpretative:
Fauna (Water Fowl)

3. Applied Hydrology Division,
Inland Waters Directorate,
Environment Canada,
Ottawa, Ontario.
K1A 0E7
Telephone: (819) 997-1509

Baseline:
Hydrology

4. Sediment Survey Section,
Applied Hydrology Division,
Inland Waters Directorate,
Environment Canada,
Ottawa, Ontario.
K1A 0E7
Telephone: (819) 997-1185

Baseline:
Sedimentation

or

District Office,
Environment Canada,
700 Calgary Power Building,
110 - 12th Avenue, S.W.,
Calgary, Alberta.
T2R 0G7
Telephone: (403) 266-1631

5. Water Quality Branch,
Inland Waters Directorate,
Environment Canada,
Ottawa, Ontario.
K1A 0E7
Telephone: (819) 997-3422

Baseline:
Water Quality

6. Water Resources Branch,
Inland Waters Directorate,
Environment Canada,
Ottawa, Ontario.
K1A 0E7
Telephone: (819) 997-2098

Baseline:
Hydrography

or

District Office,
Environment Canada,
700 Calgary Power Building,
110 - 12th Avenue, S.W.,
Calgary, Alberta.
T2R 0G7
Telephone: (403) 266-1631

IV Transport Canada

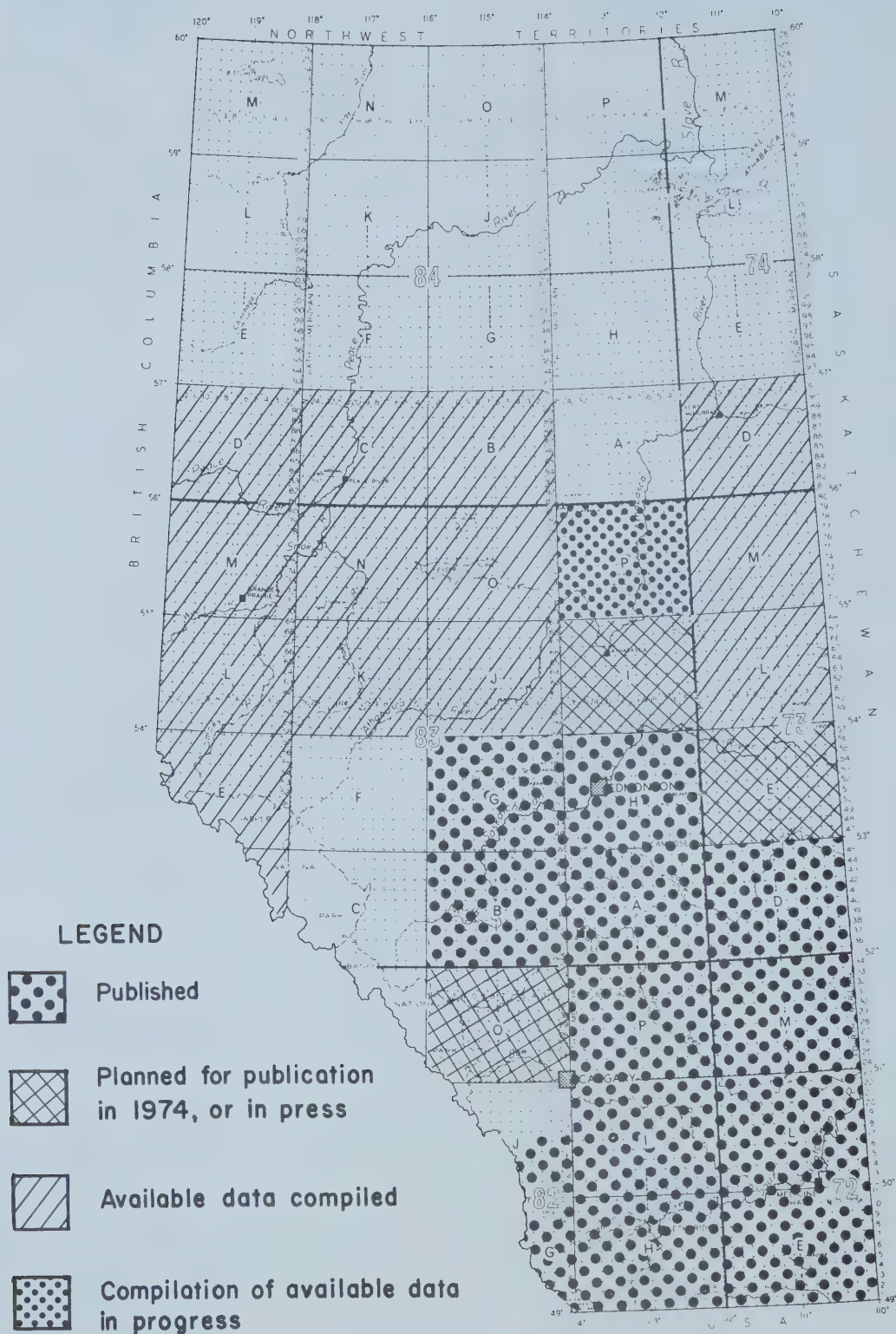
1. Ministry of Transport,
Government of Canada,
Transport Canada Building,
Place de Ville,
Ottawa, Ontario.
K1A 0N5
Telephone: (613) 996-7501

Baseline:
Climate

APPENDIX 1

STATUS OF BEDROCK
TOPOGRAPHY MAPPING PROGRAM

ALBERTA RESEARCH



Status (1973) of the Bedrock Topography Mapping Program of the Groundwater Division, Research Council of Alberta.

APPENDIX 2

ENERGY RESOURCES CONSERVATION BOARD

BASELINE DATA

FILE	FILE TYPE	TYPE OF DATA	SECURITY	REMARKS
Basic Oil, Gas and Service Well Data	Magnetic Tape	Geological Tops Basic Drilling Data Status Record Casing, Logs, Perforations & Treatment Cored Intervals Drill Stem Tests Wire Line Tests C.R. Sampler Tests Swab Tests	(a) Where located within declared pools, information is non-confidential	Attachment 1-(a) Computer Print-out of information contained on complete well file
			(b) If located outside a declared pool, information is confidential for one year	(b) Record layout forms
			(c) Retrieval programs accessing tape files contain safeguards to assure that output does not contain confidential information	Attachment 2- Example of micro-filmed well file
Oil Sands Evaluation	Magnetic Tape	Basic Well Data	See Item (b) above	Attachment 3- Example of information card output
Bottom Hole Pressures (Oil, Gas and Service)	80 Column Cards	Detail Pressure Data by Field/Pool/Well	See Item (a) and (b) above	Attachment 4- Example page from quarterly report
Production and Injection (Oil, Gas, Service)	Magnetic Tape and Disc	Cumulative Production and/or Injection by Field/Pool/Well	See Item (a) and (b) above	
Fluid Analysis (Oil, Gas, Water)	Microfilm	Oil, Gas, Water Analysis by Field/Pool/Well	See Item (a) and (b) above	

FILE	FILE TYPE	TYPE OF DATA	SECURITY	REMARKS
Core Analysis (Oil and Gas Wells)	Magnetic Tape	Analysis of Core	Confidential for one year	Attachment 7- Example of data Stored
Basic Coal Exploration and Mine Development Infill Drilling Data	Hard Copy	Hole Particulars Geophysical Logs Lithological Descriptions Drillers Logs, Cored Sections, Chip or Core Samples Coal Analysis	Security Status under Review	
Adits (Prospect Tunnels) and Trenches	Hard Copy	Location Description Plan Coal Analysis	Confidential Non-Confidential Confidential for 5 years Confidential	
Abandoned Mines	Microfilm	Basic Information Location	Non-Confidential	
Mine Development	Hard Copy and Microfilm	Mine Plans Geological Data Mining Method Details Engineering Documentation	Confidential	
Coal Production	Hard Copy	Monthly Coal Production, Dust Analysis	Non-Confidential	

INTERPRETATIVE DATA

File	File Type	Type of Data	Security	Remarks
Oil & Gas Reserves	Magnetic Tape	Initial Oil/Gas/Sulphur in place Recovery Fractions	Declared Pools - Non Confidential Remainder Confidential For One Year	Attachment 8 - Example File Output.
Coal Reserves	Hard Copy	Potential Reserves in Place Proved Reserves in Place Proved Recoverable Reserves Coal Deposit Outlines Coal Field Outlines	Non Confidential Non Confidential Non Confidential Confidential Non Confidential	Being converted to magnetic tape

00/11-18-C05-C5W4/C

CANADIAN MONTANA GAS 11-18-5-5

CASING

LCGS

TYPE	SIZE (IN)	SET AT (FT)	TYPE	INTERVAL
SFC CSG	8.625	447	(C4) MICROLOG	700- 3696
INT CSG	*****	*****	(C1) ELECTRIC	447- 3698
PROD CSG	5.500	3672	(19) COLLAR	2270- 3599
LINER	*****	*****	(13) TEMPERATURE	500- 3600

PERFORATION OR TREATMENT

TYPE	DATE	INTERVAL	SHOTS/FT
(C1) BULLET PERFORATION	26/08/57	03597-03600	8
(53) BRIDGE PLUG CAPPED W/CEMENT	04/09/57	02610-02610	
(C1) BULLET PERFORATION	04/09/57	02564-02568	6
(51) CEMENT PLUG	13/06/63	02485-02593	

ECORE TYPE 06

RECORD NO. 3711

00/11-18-005-05W4/C

CANADIAN MONTANA GAS 11-18-5-5

ACCRED INTERVALS

NO.	DATE CUT	INTERVAL	TYPE	FLUID	FT.REC	ANALYSED
1	21/07/57	2482- 2527	(0) NOT QUALIFIED, UNSPECIFIED	(0) NOT SPECIFIED, NCT REPORTED	(0) NO	(0) NO
2	26/07/57	3510- 3533	(0) NOT QUALIFIED, UNSPECIFIED	(0) NOT SPECIFIED, NCT REPORTED	(0) NO	(0) NO

RECORD TYPE 01-----19/12/74-----RECORD NO. 3707

00/11-18-005-05W4/C CANADIAN MONTANA GAS 11-18-5-5

RESTUDY (1) YES **CONVENTIONAL MEASUREMENT**

FORMATION	DEPTH	SS ELEV	QUALITY	DESCRIPTION
(1420) PAKOWKI FM	480	2586	(0) LOGS,GOOD	(0) TOP OF UNIT
(1585) UPPER MILK RIVER	975	2091	(0) LOGS,GOOD	(0) TOP OF UNIT
(1590) LOWER MILK RIVER	1023	2043	(0) LOGS,GOOD	(0) TOP OF UNIT
(1600) COLORADO GRP	1312	1754	(0) LOGS,GOOD	(0) TOP OF UNIT
(1640) MEDICINE HAT SD	1422	1644	(0) LOGS,GOOD	(0) TOP OF UNIT
(1860) SECOND WHITE SPECKLED SH	2080	986	(0) LOGS,GOOD	(0) TOP OF UNIT
(2060) BASE FISH SCALES ZONE	2346	720	(0) LOGS,GOOD	(0) TOP OF UNIT
(2130) BOW ISLAND SC	2485	581	(0) LOGS,GOOD	(0) TOP OF UNIT
(2480) MANNVILLE GRP	3011	55	(0) LOGS,GOOD	(0) TOP OF UNIT
(3200) BASAL MANNVILLE	3263	- 197	(0) LOGS,GOOD	(0) TOP OF UNIT
(4240) RIERDON FM	3359	- 293	(0) LOGS,GOOD	(0) TOP OF UNIT
(4280) SAWTOOTH FM	3509	- 443	(0) LOGS,GOOD	(0) TOP OF UNIT
(4340) SHAUNAVON FM	3557	- 491	(0) LOGS,GOOD	(0) TOP OF UNIT
(6280) LIVINGSTONE FM	3612	- 546	(0) LOGS,GOOD	(0) TOP OF UNIT

RECORD TYPE 03-----19/12/74-----RECORD NO. 3708

AREA 1 00/11-18-005-05W4/0, BOTTOM-HOLE CO-ORDINATES S 198C E 1980, CANADIAN MONTANA GAS 11-18-5-5

FIELD (595) MANYBERS, POOL (213001) BOW ISL A , LICENSEE (155) CDN MNTANAGASA, AGENT (***). *****

GROUND ELEV. 3053, KB ELEV. 3066, CSG FLANGE ELEV.*****, WELL CLASSIFICATION (0) DEVELOPMENT

CONFIDENTIAL (0) NO, CONFIDENTIAL DEPTH *****, CURRENT STATUS (04) ABAN , CURRENT STATUS DATE 13/06/63

LICENSED DATE 22/05/57,SPULDED DATE 16/07/57,FIN DRING DATE 30/07/57,PROD CSG SET DATE 31/07/57,ON PROD DATE 21/11/57

TD 3701 SS ELEV - 635, P8C 2610 SS ELEV 456, TVD ***** SS ELEV ***** WSD ***** SS ELEV *****

UNIVERSAL BOTTOM-HOLE LOCATION REFERENCE THEORETICAL BOTTOM-HOLE LOCATION REFERENCE

LATITUDE DEGREES 49.38670, LONGITUDE DEGREES 110.66938 LATITUDE DEGREES 49.38781, LONGITUDE DEGREES 110.66418

RECORD TYPE 04-----19/12/74-----RECORD NO. 3709

00/11-18-005-05W4/0 CANADIAN MONTANA GAS 11-18-5-5

25,CAP G ,05/09/57 22,FL G ,21/11/57 28,SUS G ,17/10/62

RECORD TYPE 05-----19/12/74-----RECORD NO. 3710

PROPORTIONAL RECORD LAYOUT FORM

Application GENERAL WELL DATA FILE Type of Records FIXED LENGTH By H. ANTUNO Date 9/6/66 Page 1 of 3

RECORD NAME AND REMARKS	1	5	6	10	11	15	16	20	21	25	26	30	31	35	36	40	41	45	46	50	51	55	56	60	61	65	66	70	71	75	76	80	81	86	90	91	95	96	100
RECORD 01 GEOLOGICAL TOPS & MARKERS	IDENTIFIER LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	
RECORD 02 TVD RELATED GEOLOGICAL TOPS & MARKERS	IDENTIFIER LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	
RECORD 03 BASIC WELL DATA	IDENTIFIER LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	
RECORD 04 STATUS HISTORY	IDENTIFIER LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	LOC. CODE	

Data fields in display mode

*All other data fields are recorded in the packed mode (computational-3).

*Data fields which would normally be blank will contain -8 in the low order position of the data field, except N-S, E-W, Well name, Lic Code and Agent Code. These will be blanks.

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PROPORTIONAL RECORD LAYOUT FORM

GENERAL WELL DATA FILE

Type of Records FIXED LENGTH

By H. ANTONIUS Date 9/6/66 Page 2 of 3

[illegible]

PROPORTIONAL RECORD LAYOUT FORM

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*00/10-20-080-13W4

06/03/73 NO 1*

CO-ORD- S 2364 W 1902 TYPE TEST HOLE # 10-20

OPERATOR- HONOLULU OIL CORP.

PERMIT NO LEASE GRND 2257 KB 2265 TD 1672

FIN DRLG 17/02/58 CONF NO GRN SIZE / GRAVITY CODE 0

RICH BITUMEN TOP RICH BITUMEN BASE

LOGS ES 325-1669 ML 1450-1660

CORE 1458-1532 TYPE 4 ANAL 3 1532-1582 TYPE 4 ANAL 3

CORE 1582-1626 TYPE 4 ANAL 3 - 999 TYPE 7 ANAL

CORE 1000-1660 TYPE 7 ANAL 0

E.R.C.B. - OIL SANDS WELL DATA

JUL 1, 1974 - SEP 30, 1974
ENERGY RESOURCES CONSERVATION BOARD

---LOCATION---	--DATE--	DATUM PRESSURE PSIG	DATUM DEPTH FT	SUBSURFACE PRESSURE DATA			CASING PRESS- PSIG	LIQUID LEVEL- FT	FLUID GRAVITY PSI/FT	DOWNER EQUIPMENT ELEMENT	PAGE
				RUN DEPTH FT	RUN TEMP F	SHUT-IN PERIOD- HRS	TUBING PRESS- PSIG				
02-23-035-20W4	18/06/74	1775	5424	5372	138	30	23		0.480	GULF	22615
FENN BIG VALLEY D-3C POOL		(-2570)									
09-35-035-20W4	06/06/74	1744	5384	5380	141	242	775		0.395	GULF	20734
FENN D-3F POOL	(-2600)										
12-11-037-20W4	18/06/74	1764	5396	5396		6 YRS	354		0.330	GULF	22615
FERRIER BELLY RIVER A POOL	(-2365)										
04-07-041-08W5	05/07/74	1055	5554			24	490	5008	0.300	AMC	AMS
	06/07/74	1092				48	620	5432	0.300	AMC	AMS
	07/07/74	1128				72	560	5448	0.300	AMC	AMS
	08/07/74	1177				96	695	5385	0.300	AMC	AMS
	09/07/74	1173				120	705	5448	0.300	AMC	AMS
	10/07/74	1212				144	730	5385	0.300	AMC	AMS
	11/07/74	1254				168	745	5260	0.300	AMC	AMS
	12/07/74	1237				192	765	5432	0.300	AMC	AMS
	13/07/74	1242				216	770	5432	0.300	AMC	AMS
	14/07/74	1247				240	780	5432	0.300	AMC	AMS
	15/07/74	1258				264	800	5401	0.300	AMC	AMS
	16/07/74	1278				288	805	5401	0.300	AMC	AMS
	17/07/74	1283				312	815	5401	0.300	AMC	AMS
	18/07/74	1288				336	815	5401	0.300	AMC	AMS
	19/07/74	1293				360	820	5401	0.300	AMC	AMS
	20/07/74	1298				384	825	5401	0.300	AMC	AMS
	21/07/74	1303				408	830	5401	0.300	AMC	AMS
	22/07/74	1308				432	835	5401	0.300	AMC	AMS
	23/07/74	1313				456		5401	0.300	AMC	AMS
FERRIER CARDIUM B POOL	(-4000)										
08-28-039-08W5	21/08/74	1515	7395	7311	157	3 DAY	1175		0.200	GIL	28223
FERRIER CARDIUM I POOL	(-3740)										
07-32-038-07W5	26/07/74	2436	7111	7119	160	67 DAY	1870	6950	0.295	GIL	32211
FERRIER CARDIUM J POOL	(-3940)										
11-18-038-07W5	25/06/74	2275	7393	7250		9 WDS	533	2169	0.334	JT	2434

E.C.C. & C. G. ALBERTA
SEPTEMBER 1974

JUL 1, 1974 - SEP 30, 1974
ENERGY RESOURCES CONSERVATION BOARD

---	LOCATION---	DATE--	DATUM PRESS-PSIG	DATUM DEPTH	RUN DEPTH	SHUT-IN PERIOD-HRS	TUBING PRESS-PSIG	CASING PRESS-PSIG	LIQUID LEVEL-FT	FLUID GRADIENT-PSI/FT	OWNER	EQUIPMENT ELEMENT	PAGE	11
DRUMHELLER D-2A POOL (-2715)														
14-25-029-20W4	27/06/74	646 BU	2481	104	49					0.380E	GRAY	28219		
	25/06/74	642 BU	2487	104	32					0.380E	GRAY	28778		
	27/06/74	644 BU	2487	104	48					0.380E	GRAY	28778		
DUHAMEL D-2A POOL (-2000)														
05-17-045-21W4	09/07/74	1820 BU	5398	168	117					0.356E	GIL	7761		
	10/07/74	1813 BU	5398	168	141					0.356E	GIL	7761		
	11/07/74	1809 BU	5398	168	116					0.356E	GIL	7761		
	10/07/74	1805 BU	5398	168	140					0.356E	GIL	15906		
	11/07/74	1805 BU	5398	168	166					0.356E	GIL	15906		
DUHAMEL D-3B POOL (-2300)														
05-17-045-21W4	24/07/74	1457	4477	131	EXT	0			790	0.480	WP	4578		
	24/07/74	1449	4442	130	EXT	0				0.480	WP	4578		
	24/07/74	1456	4380	132	DAY	0			450	0.363	WP	4578		
	24/07/74	1450	4318	131	11 DAY	363			1700	0.454	WP	4578		
	EXCELSIOR D-2 POOL (-1600)													
13-17-045-21W4	24/07/74	1443	4745	135	EXT	0			450	0.312	WP	4573		
	23/07/74	1456	4736	134	EXT	402				0.303	WP	4573		
	24/07/74	1454	4760	135	EXT	1240				0.341	WP	4578		
	23/07/74	1467	4759	136	EXT	1294				0.046	WP	4578		
	24/07/74	1459	4744	131	EXT					0.059	WP	4573		
FENN BIG VALLEY D-3A POOL (-2600)														
12-03-056-24W4	29/08/74	1236 I	3895	118	EXT	42		0		0.390	GRAY	31169		
	29/08/74	1228 I	3889	118	EXT	42		0		0.390	GRAY	31013		
	29/08/74	1226 I	3885		EXT	30		30		0.411	GRAY	31169		
	29/08/74	1219 I	3879		EXT	30		30		0.411	GRAY	31013		
09-10-056-24W4	29/08/74	1214 I	3884	119	EXT	25		0		0.358	GRAY	31169		
	29/08/74	1211 I	3878	119	EXT	25		0		0.358	GRAY	31013		
FENN BIG VALLEY D-3B POOL (-2600)														
03-10-035-20W4	18/06/74	1766	5321	139		30				0.320	GULF	22615		

E.M.C.B. ALBERTA
SEPTEMBER 1974

CORE ANALYSIS WELL SUMMARY PART I

WELL NAME

REQ BY BOBER JOBC05

TUP (CORE ANALYSIS) 08721

BASE (CORE ANALYSIS) 08761

PROCESS CHOICE VARIABLE

LAB CODE C02 DATE ANALYSED 20/08/68

FLUID CODE 1

TECHNIQUE CODE 0

HANDLING CODE 0

ANALYSIS CODE 3

JCB-NO 5 DEPT REQ BY OIL
 IDENTIFIER 00/C6-33-059-15W5M/O
 FIELD-CODE 979
 PCOL CODE 720001
 KB ELEV 2936

CUTOFFS APPLIED TO KMAX
 PREFERENCE 1 FULL DIAM PREF
 PREFERENCE 2 FULL DIAM PREF

UPPER POR %	GROSS	GROSS	GROSS	GROSS	GROSS
LOWER POR %	GROSS	GROSS	GROSS	GROSS	GROSS
LOWER PERM MD	GROSS	0.10	1.00	2.00	3.00
UPPER PERM MD	6000.00	0.99	1.99	2.99	5.99
FOOTAGE	27.5	4.2	2.2	2.3	4.2
PURCISITY-%-FT	86.5	7.9	7.1	6.6	12.2
POROSITY-%	3.1	1.9	3.2	2.9	2.9
FOOTAGE(1)	27.5	4.2	2.2	2.3	4.2
PERM-FT(1)	1049.85	1.37	3.17	6.14	19.21
PERM(1)	38.18	0.33	1.44	2.67	4.57
FOOTAGE(2)	27.5	4.2	2.2	2.3	4.2
PERM-FT(2)	813.82	0.28	1.10	2.92	13.37
PERM(2)	29.59	0.07	0.50	1.27	3.18
FOOTAGE(3)	25.4	4.2	2.2	2.3	3.0
PERM-FT(3)	189.82	0.47	1.04	0.56	2.96
PERM(3)	7.47	0.11	0.47	0.24	0.99
H2O SATN-%	C.C	0.0	0.0	C.C	C.C
CIL SATN-%	0.0	0.0	0.0	C.C	C.C

TOPS AND CONTACTS	DEPTH KB	BASED ON	BASIS
	CORE ANAL.	LOGS	
ZLNE TOP			
PUR TOP OR CONGL TOP	8722.9	8729.0	1
U. SAND TOP OR GAS/CIL	8722.9	8729.0	1
L. SAND TOP OR GAS/H2O			
CIL/WATER	8752.9	8759.0	4
POROSITY BASE			
ZLNE BASE			

CORE ANALYSIS WELL SUMMARY PART II

WELL NAME:

REQ BY: BOBER JOB005
 TOP (CORE ANALYSIS): 08721
 BASE(CORE ANALYSIS): 08761
 PROCESS CHOICE VARIABLE
 LAB CODE: D02 DATE ANALYSED: 20/08/68
 FLUID CODE: 1
 TECHNIQUE CODE: 0
 HANDLING CODE: 0
 ANALYSIS CODE: 3

DEPT REQ BY:OIL
 JOB-NO 5 DATE-REQ: 06/12/74.
 IDENTIFIER: 00/06-33-059-15W5M/O
 FIELD-CODE: 979
 POOL CODE: 720001
 KB ELEV: 2936

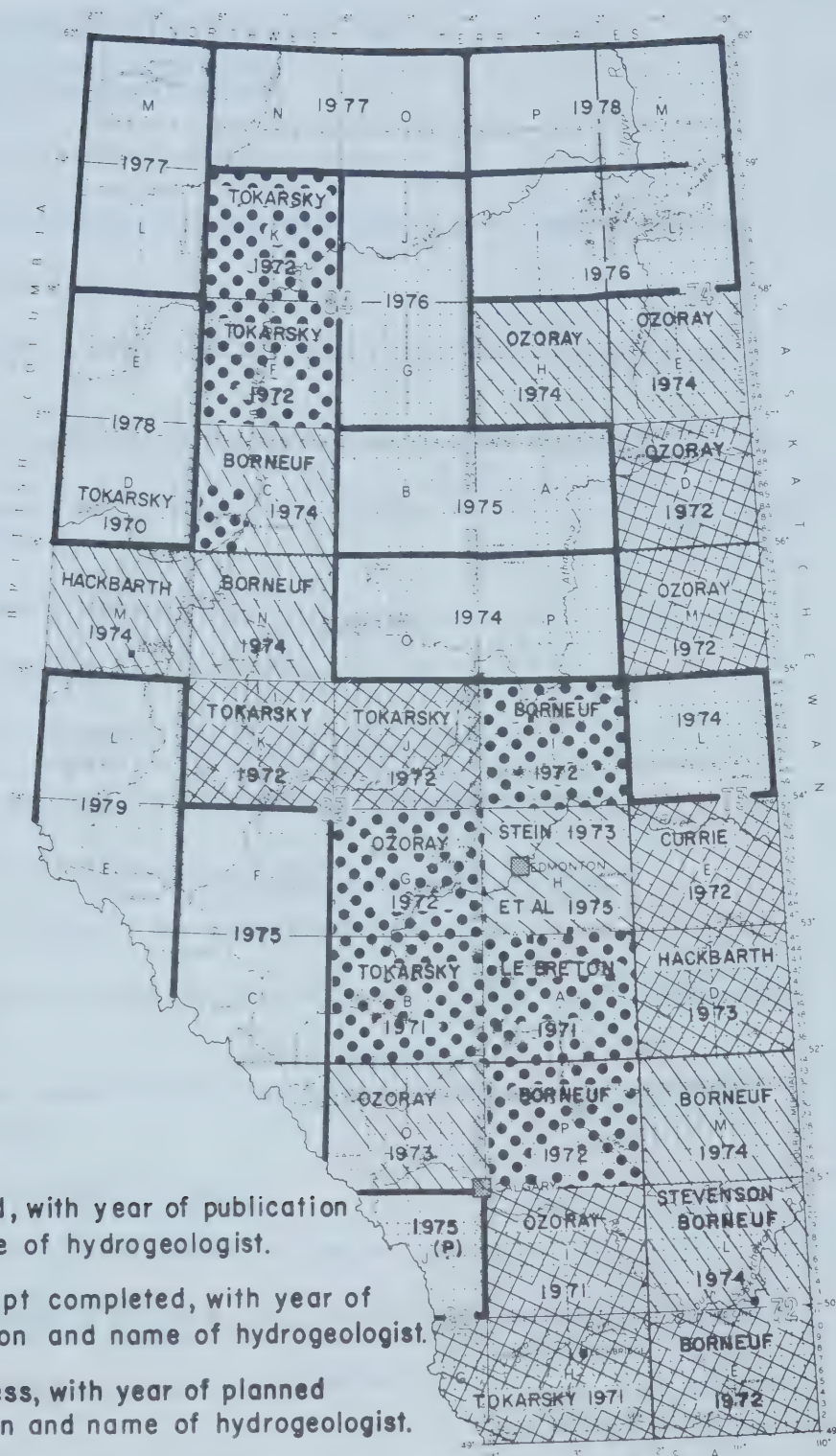
CUTOFFS APPLIED TO: KMAX
 PREFERENCE 1: FULL DIAM PREF
 PREFERENCE 2: FULL DIAM PREF

UPPER POR %	GROSS	GROSS	GROSS	GROSS	GROSS
LOWER POR %	GROSS	GROSS	GROSS	GROSS	GROSS
LOWER PERM MD	GROSS	0.10	1.00	2.00	3.00
UPPER PERM MD	6000.00	0.99	1.99	2.99	5.99
FOOTAGE	27.5	4.2	2.2	2.3	4.2
POROSITY-%-FT	86.5	7.9	7.1	6.6	12.2
POROSITY-%	3.1	1.9	3.2	2.9	2.9
FOOTAGE(1)	27.5	4.2	2.2	2.3	4.2
PERM-FT(1)	1049.85	1.37	3.17	6.14	19.21
PERM(1)	38.18	0.33	1.44	2.67	4.57
FOOTAGE(2)	27.5	4.2	2.2	2.3	4.2
PERM-FT(2)	813.82	0.28	1.10	2.92	13.37
PERM(2)	29.59	0.07	0.50	1.27	3.18
FOOTAGE(3)	25.4	4.2	2.2	2.3	3.0
PERM-FT(3)	189.82	0.47	1.04	0.56	2.96
PERM(3)	7.47	0.11	0.47	0.24	0.99
H2O SATN-%	0.0	0.0	0.0	0.0	0.0
OIL SATN-%	0.0	0.0	0.0	0.0	0.0
UPPER POR %	GROSS	GROSS	GROSS	GROSS	GROSS
LOWER POR %	GROSS	GROSS	GROSS	GROSS	GROSS
LOWER PERM MD	6.00	10.00	20.01	50.01	GROSS
UPPER PERM MD	9.99	20.00	50.00	GROSS	GROSS
FOOTAGE	0.9	0.0	5.7	7.5	30.0
POROSITY-%-FT	2.2	0.0	19.1	40.0	99.7
POROSITY-%	2.4	0.0	3.4	5.3	3.3
FOOTAGE(1)	0.9	0.0	5.7	7.5	30.0
PERM-FT(1)	7.42	0.00	155.02	75857.40	76049.85
PERM(1)	8.24	0.00	27.20	10114.32	2535.00
FOOTAGE(2)	0.9	0.0	5.7	7.5	30.0
PERM-FT(2)	2.13	0.00	74.60	5126.89	5221.41
PERM(2)	2.37	0.00	13.09	683.59	174.05
FOOTAGE(3)	0.9	0.0	5.7	7.5	27.9
PERM-FT(3)	1.54	0.00	15.11	196.51	221.78
PERM(3)	1.71	0.00	2.65	26.20	7.95
H2O SATN-%	0.0	0.0	0.0	0.0	0.0
OIL SATN-%	0.0	0.0	0.0	0.0	0.0

APPENDIX 3

STATUS OF HYDROGEOLOGICAL RECONNAISSANCE MAPPING PROGRAM

ALBERTA RESEARCH



Status (1973) of the Hydrogeological Reconnaissance Mapping Program of the Groundwater Division, Research Council of Alberta.

APPENDIX 4

EARTH SCIENCE REPORTS

EARTH SCIENCES AND LICENSING DIVISION

ALBERTA ENVIRONMENT

- AIRBORNE REMOTE SENSING FOR GROUNDWATER STUDIES IN PRAIRIE ENVIRONMENTS
- BIBLIOGRAPHY OF GROUNDWATER STUDIES IN ALBERTA - 1912 - 1971
- BON ACCORD OIL CONTAMINATION STUDY
- CANAL LINING FOR SEEPAGE CONTROL IN ALBERTA
- CHANGES IN THE CHEMISTRY OF SUPERNATANT LIQUOR WITH VIGOROUS AERATION
- CLYDE GROUNDWATER STUDY
- A CORE OF THE MOUNT HEAD AND LIVINGSTONE FORMATIONS, HIGHWOOD RIVER AREA, ALBERTA
- DATA PROCESSING BY DIGITAL COMPUTER FOR GROUNDWATER EVALUATION IN ALBERTA
- DATA PROCESSING BY DIGITAL COMPUTER FOR GROUNDWATER EVALUATION IN ALBERTA, JANUARY, 1973
- DRILLING PROGRAM - GRANDE CACHE AREA
- EDSON AQUIFER TESTING PROGRAM, EDSON, ALBERTA
- EFFECTIVENESS OF RESERVOIR SEALING WITH SODIUM CARBONATE
- THE EFFECTS OF THE DISPOSAL ON LAND OF OIL WELL SUMP WATER
- ELK POINT GROUNDWATER POLLUTION STUDY
- FAIRVIEW AREA, ALBERTA - GROUNDWATER INVESTIGATION
- FEASIBILITY STUDY OF DUGOUT AND SHALLOW WELL SITES IN THE FORT VERMILION - LA CRETE AREA
- FIELD TESTING OF DUGOUTS TREATED WITH SODIUM CARBONATE AND BENTONITE - PEACE RIVER REGION
- GRANUM EAST WATER SUPPLY STUDY
- GRANUM SEWAGE EFFLUENT DISPOSAL - THREE YEAR REPORT - 1970 - 1972
- A GREENHOUSE STUDY ON HIGH APPLICATION RATES OF SEWAGE SLUDGE TO SOIL
- GROUNDWATER AVAILABILITY - M.D. OF STARLAND #47

- GROUNDWATER AVAILABILITY IN THE STURGEON STUDY AREA
- GROUNDWATER CONTAMINATION - SHERWOOD PARK SUBDIVISION
- GROUNDWATER EXPLORATION AND EVALUATION BY INFRARED REMOTE SENSING - GRANUM EAST
- GROUNDWATER GEOLOGY OF WEST COLEMAN, ALBERTA, CANADA
- GROUNDWATER INVENTORY - SOUTH SASKATCHEWAN DRAINAGE BASIN
- GROUNDWATER INVENTORY OF SOUTHERN ALBERTA (SOUTH OF 54 DEGREE)
- GROUNDWATER INVESTIGATION, PEACE-ATHABASCA DELTA
- GROUNDWATER REGIME OF THE LEE CREEK WATERSHED
- GROUNDWATER STUDY - WORSLEY AREA
- GULL LAKE STUDY - PRELIMINARY REPORT
- HYDROCARBON CONTAMINATION OF SHALLOW WATER TABLE AQUIFERS
- HYDROGEOLOGICAL EVALUATION CROWSNEST RIVER CHANNEL FOR TOWN OF BLAIRMORE
- HYDROGEOLOGICAL EVALUATION OF THE STAVELY PREGLACIAL CHANNEL
- HYDROGEOLOGY OF THE IRRIGATION STUDY BASIN, OLDMAN RIVER DRAINAGE, ALBERTA, CANADA
- HYDROGEOLOGY - WAINWRIGHT STUDY AREA
- HYDROLOGICAL EVALUATION - TOWN OF IRVINE
- INSTALLATION OF PLASTIC CASING
- IRON REMOVAL ON MCGILLIVRAY CREEK
- IRON STUDIES ON MCGILLIVRAY MINE EFFLUENT
- JENNER AREA WATER SUPPLY
- MILK RIVER SANDSTONE WATER WELL SURVEY
- PEACE ATHABASCA DELTA PROJECT - INTERIM REPORT
- PREGLACIAL CHANNEL GROUNDWATER STUDY - MANNING

- PRELIMINARY GROUNDWATER INVENTORY REPORT OF THE RED DEER RIVER DEVELOPMENT STUDY AREA
- PRELIMINARY INVESTIGATION REPORT GROUNDWATER INVENTORY - ALBERTA - PREPARED FOR SASKATCHEWAN - NELSON BASIN BOARD
- THE PRINCIPLES OF ELECTRIC LOGGING AS APPLIED TO GROUNDWATER EXPLORATION
- RECLAMATION OF A SALINE-SODIC SOIL BY THE HIGH-SALT-WATER-DILUTION METHOD
- RESPONSE TO NITROGEN, PHOSPHORUS AND POTASSIUM OF ALFALFA GROWING IN COAL REFUSE
- SEWAGE SLUDGE AS A FERTILIZER
- SHERWOOD PARK SOUTH GROUNDWATER STUDY
- TILE DRAINAGE PERFORMANCE IN A LACUSTRINE DISCHARGE AREA
- TILE INTERCEPTION DRAINAGE
- UTILIZATION OF MUNICIPAL AND INDUSTRIAL WASTE
- VEGETATION OF SLACK PILES
- THE WATER QUALITY OF SOME COAL MINE EFFLUENTS AND THEIR EFFECTS ON STREAM BENTHOS AND FISH
- WATER REGIME OF RED DEER LAKE, ALBERTA
- WEST EDSON WATER SUPPLY

APPENDIX 5

SOIL SURVEY REPORTS AND MAPS

ALBERTA INSTITUTE OF
PEDOLOGY

TABLE I

RECONNAISSANCE SOIL SURVEY REPORTS AND MAPS
Available from the Department of Extension
 University of Alberta, Edmonton

Alberta Soil
 Survey Report
Numbers

	1*	Macleod sheet; F.A. Wyatt and J.D. Newton, 1925. Map scale 1" = 3 miles. Contact T.W. Peters.
	2*	Medicine Hat sheet; F.A. Wyatt and J.D. Newton, 1926. Map scale 1" = 3 miles. Contact A.A. Kjearsgaard.
	3*	Sounding Creek sheet; F.A. Wyatt and J.D. Newton, 1927. Map scale 1" = 3 miles. Contact A.A. Kjearsgaard.
	6*	Peace River, High Prairie, Sturgeon Lake area; F.A. Wyatt, 1935. Map scale 1" = 4 miles. Contact J.D. Lindsay.
	7*	Rainy Hills sheet; F.A. Wyatt <u>et al</u> , 1937. Map scale 1" = 3 miles. Contact A.A. Kjearsgaard.
	8*	Sullivan Lake sheet; F.A. Wyatt and J.D. Newton, 1938. Map scale 1" = 3 miles. Contact A.A. Kjearsgaard.
	9*	Lethbridge and Pincher Creek sheets; F.A. Wyatt, 1939. Map scale 1" = 3 miles. Contact T.W. Peters.
	10*	Milk River sheet; F.A. Wyatt and J.D. Newton, 1941. Map scale 1" = 3 miles. Contact T.W. Peters.
Reprinted	11	Blackfoot and Calgary sheets; F.A. Wyatt and J.D. Newton, 1942. Map scale 1" = 3 miles. Contact T.W. Peters.
	12*	Rosebud and Banff sheets; F.A. Wyatt and J.D. Newton, 1943. Map scale 1" = 3 miles. Contact T.W. Peters.
	13*	Wainwright and Vermilion sheets; F.A. Wyatt and J.D. Newton, 1944. Map scale 1" = 3 miles. Contact T.W. Peters.
	14*	Peace Hills sheet; F.A. Wyatt and J.D. Newton, 1947. Map scale 1" = 3 miles. Contact T.W. Peters.
Reprinted	15*	Rycroft and Watino sheets; Wm. Odynsky and J.D. Newton, 1950. Map scale 1" = 3 miles. Contact J.D. Lindsay or M.D. Scheelar.
	16*	Red Deer sheet; W.E. Bowser and T.W. Peters, 1951. Map scale 1" = 3 miles. Contact T.W. Peters.

TABLE I (continued)

Alberta Soil
Survey Report
Numbers

- | | |
|--------------|--|
| 17* | High Prairie and McLennan sheets; Wm. Odynsky <u>et al</u> , 1952. Map scale 1" = 3 miles. Contact M.D. Scheelar or J.D. Lindsay. |
| 18 | Grande Prairie and Sturgeon Lake sheets; Wm. Odynsky <u>et al</u> , 1956. Map scale 1" = 3 miles. Contact J.D. Lindsay or M.D. Scheelar. |
| 19 | Rocky Mountain House Sheet; T.W. Peters and W.E. Bowser, 1960. Map scale 1" = 2 miles. Contact T.W. Peters. |
| 20 | Beaverlodge and Blueberry Mountain sheets; Wm. Odynsky <u>et al</u> , 1961. Map scale 1" = 3 miles. Contact J.D. Lindsay. |
| Reprinted 21 | Edmonton sheet; W.E. Bowser <u>et al</u> , 1962. Map scale 1" = 2 miles. Contact A.A. Kjearsgaard. |
| 22 | St. Mary and Milk Rivers Development; W.E. Bowser <u>et al</u> , 1963. Map scale 1" = 1 mile. Contact A.A. Kjearsgaard. |
| 23 | Cherry Point and Hines Creek area; S.W. Reeder and Wm. Odynsky, 1965. Map scale 1" = 3 miles. Contact M.D. Scheelar. |
| 24 | Buck Lake and Wabamun Lake area; J.D. Lindsay and T.W. Peters, 1968. Map scale 1" = 2 miles. Contact J.D. Lindsay. |
| 25 | Grimshaw and Notikewin area; M.D. Scheelar and Wm. Odynsky, 1968. Map scale 1" = 3 miles. Contact M.D. Scheelar. |
| 26 | Hotchkiss and Keg River area; S.W. Reeder and Wm. Odynsky, 1969. Map scale 1" = 3 miles. Contact M.D. Scheelar. |
| 27 | Whitcourt and Barrhead area; A. Wynnyk <u>et al</u> , 1969. Map scale 1" = 2 miles. Contact A. Wynnyk. |
| 28 | Chip Lake area; A.G. Twardy and J.D. Lindsay, 1971. Map scale 1" = 2 miles. Contact A.G. Twardy. |
| 29 | Tawatinaw sheet; A.A. Kjearsgaard, 1972. Map scale 1" = 2 miles. Contact A.A. Kjearsgaard. |
| 30 | Mt. Watt and Fort Vermilion area; M.D. Scheelar and T.M. Macyk, 1973. Map scale 1" = 3 miles. Contact M.D. Scheelar. |

TABLE I (continued)

Alberta Soil
Survey Report
Numbers

A.I.P. #S-71-31	Land Classification and Soils in the Rocky Mountains of Alberta along the North Saskatchewan River Valley; W.W. Pettapiece, 1971. Map scale 1 1/4" = 1 mile. Contact W.W. Pettapiece.
31	Hinton - Edson area; J. Dumanski, <u>et al</u> , 1973. Map scale 1" = 2 miles. Contact T.M. Macyk.

*Out of print but may be obtained on loan from the University Extension Library, The University of Alberta, Edmonton.

Reports 15 and 17 will be re-printed in the near future.

NOTE: A soil rating map accompanies each report.



Areas for which Soil
Survey Reports have been
published 1930-1973.



Areas for which Soil
Survey Reports are
available 1973.

TABLE II

EXPLORATORY SOIL SURVEYS
Available from the Research Council of Alberta

R.C.A.
Report Numbers

- | | |
|-------|---|
| 58-1 | Exploratory Soil Survey 84-C (east half), 84-B, 84-A, and 74-D; J.D. Lindsay, P.K. Heringa, S. Pawluk, and W. Odynsky, 1957. Map scale 1" = 12 miles. Contact J.D. Lindsay. |
| 59-1 | Exploratory Soil Survey of 84-D (north half), 84-E, 84-F, and 84-G; J.D. Lindsay, S. Pawluk, and W. Odynsky, 1958. Map scale 1" = 12 miles. Contact J.D. Lindsay. |
| 60-1 | Exploratory Soil Survey of 84-J, 84-K, and 84-L; J.D. Lindsay, S. Pawluk, and W. Odynsky, 1959. Map scale 1" = 12 miles. Contact J.D. Lindsay. |
| 61-1 | Exploratory Soil Survey of 84-M, 84-N, and 84-G; J.D. Lindsay, S. Pawluk, and W. Odynsky, 1960. Map scale 1" = 12 miles. Contact J.D. Lindsay. |
| 62-1 | Exploratory Soil Survey of 84-P, 84-I, and 84-H; J.D. Lindsay, S. Pawluk, and W. Odynsky, 1961. Map scale 1" = 12 miles. Contact J.D. Lindsay. |
| 63-1* | Exploratory Soil Survey of 74-M, 74-L, 74-E, and 73-L (north half); J.D. Lindsay, S. Pawluk, and W. Odynsky, 1962. Map scale 1" = 12 miles. Contact J.D. Lindsay. |
| 64-1 | Exploratory Soil Survey of 83-O, 83-P, and 73-M; A. Wynnyk, J.D. Lindsay, P.K. Heringa, and W. Odynsky, 1963. Map scale 1" = 12 miles. Contact J.D. Lindsay. |
| 64-2* | Exploratory Soil Survey of 83-L, 83-K, 83-F, and 83-J; J.D. Lindsay, A. Wynnyk, and W. Odynsky, 1963. Map scale 1" = 12 miles. Contact J.D. Lindsay. |

*Out of Print

TABLE III

DETAILED SOIL SURVEY

(I) Urban Development

Reports and maps published for:

Wetaskiwin, Ponoka, Camrose, Morinville, Stony Plain,
Forestburg, Bashaw and Leduc

(II) Parks Planning

Reports and maps published for:

Entrance, Little Bow, Young's Point, Lesser Slave Lake,
Fish Creek, Calling Lake, Wildcat Hills, Bow Valley and
Kananaskis

APPENDIX 6

SAMPLE FARMLAND ASSESSMENT SHEET

ASSESSMENT BRANCH

ALBERTA MUNICIPAL AFFAIRS

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 004 ADDRESS (STREET, APT NO., BOX, ETC.) TITLE NO
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T = TAXABLE
E = EXEMPT
B = EXEMPT SUBJECT TO BY-LAW
G = EXEMPT SUBJECT TO GRANT</td> </tr> <tr> <td>12</td><td colspan="10">MISCELLANEOUS</td> </tr> <tr><td>21</td><td colspan="10"></td><td rowspan="10">ENTITLEMENT OR ENT
OWN = REG OWNER
PUR = PURCHASER
MOR = MORTGAGE
EXE = EXECUTOR
TIM = TIMBER LIMIT
RES = RESERVE PASTURE
CUL = CULTIVATION LEASE
GRA = GRAZING LEASE
COM = COMMUNITY PASTURE
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<td>1</td><td>NO</td><td>RATE</td><td>2</td><td>NO</td><td>RATE</td><td>3</td><td>NO</td><td>RATE</td><td>4</td><td>NO</td><td>RATE</td><td>TOTAL ACRES</td><td>TOTAL</td><td>ASSESSMENT</td> </tr> <tr> <td colspan="15"></td> </tr> </table> | | | | | | | | | | 1 | NO | RATE | 2 | NO | RATE | 3 | NO | RATE | 4 | NO | RATE | TOTAL ACRES | TOTAL | ASSESSMENT | | | | | | | | | | | | | | | | 192 | <table border="1" style="width:100%; border-collapse: collapse;"> <tr>
<td>1</td><td>PLUS</td><td>2</td><td>PLUS</td><td>3</td><td>PLUS</td><td>4</td><td>PLUS</td><td>5</td><td>PLUS</td><td>6</td><td>PLUS</td><td>7</td><td>PLUS</td><td>8</td><td>PLUS</td><td>9</td><td>PLUS</td><td>10</td><td>PLUS</td><td>11</td><td>PLUS</td><td>12</td><td>PLUS</td><td>13</td><td>PLUS</td><td>14</td><td>PLUS</td><td>15</td><td>PLUS</td><td>16</td><td>PLUS</td><td>17</td><td>PLUS</td><td>18</td><td>PLUS</td><td>19</td><td>PLUS</td><td>20</td><td>PLUS</td><td>21</td><td>PLUS</td><td>22</td><td>PLUS</td><td>23</td><td>PLUS</td><td>24</td><td>PLUS</td><td>25</td><td>PLUS</td><td>26</td><td>PLUS</td><td>27</td><td>PLUS</td><td>28</td><td>PLUS</td><td>29</td><td>PLUS</td><td>30</td><td>PLUS</td><td>31</td><td>PLUS</td><td>32</td><td>PLUS</td><td>33</td><td>PLUS</td><td>34</td><td>PLUS</td><td>35</td><td>PLUS</td><td>36</td><td>PLUS</td><td>37</td><td>PLUS</td><td>38</td><td>PLUS</td><td>39</td><td>PLUS</td><td>40</td><td>PLUS</td><td>41</td><td>PLUS</td><td>42</td><td>PLUS</td><td>43</td><td>PLUS</td><td>44</td><td>PLUS</td><td>45</td><td>PLUS</td><td>46</td><td>PLUS</td><td>47</td><td>PLUS</td><td>48</td><td>PLUS</td><td>49</td><td>PLUS</td><td>50</td><td>PLUS</td><td>51</td><td>PLUS</td><td>52</td><td>PLUS</td><td>53</td><td>PLUS</td><td>54</td><td>PLUS</td><td>55</td><td>PLUS</td><td>56</td><td>PLUS</td><td>57</td><td>PLUS</td><td>58</td><td>PLUS</td><td>59</td><td>PLUS</td><td>60</td><td>PLUS</td><td>61</td><td>PLUS</td><td>62</td><td>PLUS</td><td>63</td><td>PLUS</td><td>64</td><td>PLUS</td><td>65</td><td>PLUS</td><td>66</td><td>PLUS</td><td>67</td><td>PLUS</td><td>68</td><td>PLUS</td><td>69</td><td>PLUS</td><td>70</td><td>PLUS</td><td>71</td><td>PLUS</td><td>72</td><td>PLUS</td><td>73</td><td>PLUS</td><td>74</td><td>PLUS</td><td>75</td><td>PLUS</td><td>76</td><td>PLUS</td><td>77</td><td>PLUS</td><td>78</td><td>PLUS</td><td>79</td><td>PLUS</td><td>80</td><td>PLUS</td><td>81</td><td>PLUS</td><td>82</td><td>PLUS</td><td>83</td><td>PLUS</td><td>84</td><td>PLUS</td><td>85</td><td>PLUS</td><td>86</td><td>PLUS</td><td>87</td><td>PLUS</td><td>88</td><td>PLUS</td><td>89</td><td>PLUS</td><td>90</td><td>PLUS</td><td>91</td><td>PLUS</td><td>92</td><td>PLUS</td><td>93</td><td>PLUS</td><td>94</td><td>PLUS</td><td>95</td><td>PLUS</td><td>96</td><td>PLUS</td><td>97</td><td>PLUS</td><td>98</td><td>PLUS</td><td>99</td><td>PLUS</td><td>100</td><td>PLUS</td><td>101</td><td>PLUS</td><td>102</td><td>PLUS</td><td>103</td><td>PLUS</td><td>104</td><td>PLUS</td><td>105</td><td>PLUS</td><td>106</td><td>PLUS</td><td>107</td><td>PLUS</td><td>108</td><td>PLUS</td><td>109</td><td>PLUS</td><td>110</td><td>PLUS</td><td>111</td><td>PLUS</td><td>112</td><td>PLUS</td><td>113</td><td>PLUS</td><td>114</td><td>PLUS</td><td>115</td><td>PLUS</td><td>116</td><td>PLUS</td><td>117</td><td>PLUS</td><td>118</td><td>PLUS</td><td>119</td><td>PLUS</td><td>120</td><td>PLUS</td><td>121</td><td>PLUS</td><td>122</td><td>PLUS</td><td>123</td><td>PLUS</td><td>124</td><td>PLUS</td><td>125</td><td>PLUS</td><td>126</td><td>PLUS</td><td>127</td><td>PLUS</td><td>128</td><td>PLUS</td><td>129</td><td>PLUS</td><td>130</td><td>PLUS</td><td>131</td><td>PLUS</td><td>132</td><td>PLUS</td><td>133</td><td>PLUS</td><td>134</td><td>PLUS</td><td>135</td><td>PLUS</td><td>136</td><td>PLUS</td><td>137</td><td>PLUS</td><td>138</td><td>PLUS</td><td>139</td><td>PLUS</td><td>140</td><td>PLUS</td><td>141</td><td>PLUS</td><td>142</td><td>PLUS</td><td>143</td><td>PLUS</td><td>144</td><td>PLUS</td><td>145</td><td>PLUS</td><td>146</td><td>PLUS</td><td>147</td><td>PLUS</td><td>148</td><td>PLUS</td><td>149</td><td>PLUS</td><td>150</td><td>PLUS</td><td>151</td><td>PLUS</td><td>152</td><td>PLUS</td><td>153</td><td>PLUS</td><td>154</td><td>PLUS</td><td>155</td><td>PLUS</td><td>156</td><td>PLUS</td><td>157</td><td>PLUS</td><td>158</td><td>PLUS</td><td>159</td><td>PLUS</td><td>160</td><td>PLUS</td><td>161</td><td>PLUS</td><td>162</td><td>PLUS</td><td>163</td><td>PLUS</td><td>164</td><td>PLUS</td><td>165</td><td>PLUS</td><td>166</td><td>PLUS</td><td>167</td><td>PLUS</td><td>168</td><td>PLUS</td><td>169</td><td>PLUS</td><td>170</td><td>PLUS</td><td>171</td><td>PLUS</td><td>172</td><td>PLUS</td><td>173</td><td>PLUS</td><td>174</td><td>PLUS</td><td>175</td><td>PLUS</td><td>176</td><td>PLUS</td><td>177</td><td>PLUS</td><td>178</td><td>PLUS</td><td>179</td><td>PLUS</td><td>180</td><td>PLUS</td><td>181</td><td>PLUS</td><td>182</td><td>PLUS</td><td>183</td><td>PLUS</td><td>184</td><td>PLUS</td><td>185</td><td>PLUS</td><td>186</td><td>PLUS</td><td>187</td><td>PLUS</td><td>188</td><td>PLUS</td><td>189</td><td>PLUS</td><td>190</td><td>PLUS</td><td>191</td><td>PLUS</td><td>192</td><td>PLUS</td><td>193</td><td>PLUS</td><td>194</td><td>PLUS</td><td>195</td><td>PLUS</td><td>196</td><td>PLUS</td><td>197</td><td>PLUS</td><td>198</td><td>PLUS</td><td>199</td><td>PLUS</td><td>200</td><td>PLUS</td><td>201</td><td>PLUS</td><td>202</td><td>PLUS</td><td>203</td><td>PLUS</td><td>204</td><td>PLUS</td><td>205<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| | | | | | | | | | 1 | PLUS | 2 | PLUS | 3 | PLUS | 4 | PLUS | 5 | PLUS | 6 | PLUS | 7 | PLUS | 8 |
PLUS | 9 | PLUS | 10 | PLUS | 11 | PLUS | 12 | PLUS | 13 | PLUS | 14 | PLUS | 15 | PLUS | 16 | PLUS | 17 | PLUS | 18 | PLUS | 19 | PLUS | 20 | PLUS | 21 | PLUS | 22 | PLUS | 23 | PLUS | 24 | PLUS | 25 | PLUS | 26 | PLUS | 27 | PLUS | 28 | PLUS | 29 | PLUS | 30 | PLUS | 31 | PLUS | 32 | PLUS | 33 | PLUS | 34 | PLUS | 35 | PLUS | 36 | PLUS | 37 | PLUS | 38 | PLUS | 39 | PLUS | 40 | PLUS | 41 | PLUS | 42 | PLUS | 43 | PLUS | 44 | PLUS | 45 | PLUS | 46 | PLUS | 47 | PLUS | 48 | PLUS | 49 | PLUS | 50 | PLUS | 51 | PLUS | 52 | PLUS | 53 | PLUS | 54 | PLUS | 55 | PLUS | 56 | PLUS | 57 | PLUS | 58 | PLUS | 59 | PLUS | 60 | PLUS | 61 | PLUS | 62 | PLUS | 63 | PLUS | 64 | PLUS | 65 | PLUS | 66 | PLUS | 67 | PLUS | 68 | PLUS | 69 | PLUS | 70 | PLUS | 71 | PLUS | 72 | PLUS | 73 | PLUS | 74 | PLUS | 75 | PLUS | 76 | PLUS | 77 | PLUS | 78 | PLUS | 79 | PLUS | 80 | PLUS | 81 | PLUS | 82 | PLUS | 83 | PLUS | 84 | PLUS | 85 | PLUS | 86 | PLUS | 87 | PLUS | 88 | PLUS | 89 | PLUS | 90 | PLUS | 91 | PLUS | 92 | PLUS | 93 | PLUS | 94 | PLUS | 95 | PLUS | 96 | PLUS | 97 | PLUS | 98 | PLUS | 99 | PLUS | 100 | PLUS | 101 | PLUS | 102 | PLUS | 103 | PLUS | 104 | PLUS | 105 | PLUS | 106 | PLUS | 107 | PLUS | 108 | PLUS | 109 | PLUS | 110 | PLUS | 111 | PLUS | 112 | PLUS | 113 | PLUS | 114 | PLUS | 115 | PLUS | 116 | PLUS | 117 | PLUS | 118 | PLUS | 119 | PLUS | 120 | PLUS | 121 | PLUS | 122 | PLUS | 123 | PLUS | 124 | PLUS | 125 | PLUS | 126 | PLUS | 127 | PLUS | 128 | PLUS | 129 | PLUS | 130 | PLUS | 131 | PLUS | 132 | PLUS | 133 | PLUS | 134 | PLUS | 135 | PLUS | 136 | PLUS | 137 | PLUS | 138 | PLUS | 139 | PLUS | 140 | PLUS | 141 | PLUS | 142 | PLUS | 143 | PLUS | 144 | PLUS | 145 | PLUS | 146 | PLUS | 147 | PLUS | 148 | PLUS | 149 | PLUS | 150 | PLUS | 151 | PLUS | 152 | PLUS | 153 | PLUS | 154 | PLUS | 155 | PLUS | 156 | PLUS | 157 | PLUS | 158 | PLUS | 159 | PLUS | 160 | PLUS | 161 | PLUS | 162 | PLUS | 163 | PLUS | 164 | PLUS | 165 | PLUS | 166 | PLUS | 167 | PLUS | 168 | PLUS | 169 | PLUS | 170 | PLUS | 171 | PLUS | 172 | PLUS | 173 | PLUS | 174 | PLUS | 175 | PLUS | 176 | PLUS | 177 | PLUS | 178 | PLUS | 179 | PLUS | 180 | PLUS | 181 | PLUS | 182 | PLUS | 183 | PLUS | 184 | PLUS | 185 | PLUS | 186 | PLUS | 187 | PLUS | 188 | PLUS | 189 | PLUS | 190 | PLUS | 191 | PLUS | 192 | PLUS | 193 | PLUS | 194 | PLUS | 195 | PLUS | 196 | PLUS | 197 | PLUS | 198 | PLUS | 199 | PLUS | 200 | PLUS | 201 | PLUS | 202 | PLUS | 203 | PLUS | 204 | PLUS | 205 | PLUS | 206 | PLUS | 207 | PLUS | 208 | PLUS | 209 | PLUS | 210 | PLUS | 211 | PLUS | 212 | PLUS | 213 | PLUS | 214 | PLUS | 215 | PLUS | 216 | PLUS | 217 | PLUS | 218 | PLUS | 219 | PLUS | 220 | PLUS | 221 | PLUS | 222 | PLUS | 223 | PLUS | 224 | PLUS | 225 | PLUS | 226 | PLUS | 227 | PLUS | 228 | PLUS | 229 | PLUS | 230 | PLUS | 231 | PLUS | 232 | PLUS | 233 | PLUS | 234 | PLUS | 235 | PLUS | 236 | PLUS | 237 | PLUS | 238 | PLUS | 239 | PLUS | 240 | PLUS | 241 | PLUS | 242 | PLUS | 243 | PLUS | 244 | PLUS | 245 | PLUS | 246 | PLUS | 247 | PLUS | 248 | PLUS | 249 | PLUS | 250 | PLUS | 251 | PLUS | 252 | PLUS | 253 | PLUS | 254 | PLUS | 255 | PLUS | 256 | PLUS | 257 | PLUS | 258 | PLUS | 259 | PLUS | 260 | PLUS | 261 | PLUS | 262 | PLUS | 263 | PLUS | 264 | PLUS | 265 | PLUS | 266 | PLUS | 267 | PLUS | 268 | PLUS | 269 | PLUS | 270 | PLUS | 271 | PLUS | 272 | PLUS | 273 | PLUS | 274 | PLUS | 275 | PLUS | 276 | PLUS | 277 | PLUS | 278 | PLUS | 279 | PLUS | 280 | PLUS | 281 | PLUS | 282 | PLUS | 283 | PLUS | 284 | PLUS | 285 | PLUS | 286 | PLUS | 287 | PLUS | 288 | PLUS | 289 | PLUS | 290 | PLUS | 291 | PLUS | 292 | PLUS | 293 | PLUS | 294 | PLUS | 295 | PLUS | 296 | PLUS | 297 | PLUS | 298 | PLUS | 299 | PLUS | 300 | PLUS | 301 | PLUS | 302 | PLUS | 303 | PLUS | 304 | PLUS | 305 | PLUS | 306 | PLUS | 307 | PLUS | 308 | PLUS | 309 | PLUS | 310 | PLUS | 311 | PLUS | 312 | PLUS | 313 | PLUS | 314 | PLUS | 315 | PLUS | 316 | PLUS | 317 | PLUS | 318 | PLUS | 319 | PLUS | 320 | PLUS | 321 | PLUS | 322 | PLUS | 323 | PLUS | 324 | PLUS | 325 | PLUS | 326 | PLUS | 327 | PLUS | 328 | PLUS | 329 | PLUS | 330 | PLUS | 331 | PLUS | 332 | PLUS | 333 | PLUS | 334 | PLUS | 335 | PLUS | 336 | PLUS | 337 | PLUS | 338 | PLUS | 339 | PLUS | 340 | PLUS | 341 | PLUS | 342 | PLUS | 343 | PLUS | 344 | PLUS | 345 | PLUS | 346 | PLUS | 347 | PLUS | 348 | PLUS | 349 | PLUS | 350 | PLUS | 351 | PLUS | 352 | PLUS | 353 | PLUS | 354 | PLUS | 355 | PLUS | 356 | PLUS | 357 | PLUS | 358 | PLUS | 359 | PLUS | 360 | PLUS | 361 | PLUS | 362 | PLUS | 363 | PLUS | 364 | PLUS | 365 | PLUS | 366 | PLUS | 367 | PLUS | 368 | PLUS | 369 | PLUS | 370 | PLUS | 371 | PLUS | 372 | PLUS | 373 | PLUS | 374 | PLUS | 375 | PLUS | 376 | PLUS | 377 | PLUS | 378 | PLUS | 379 | PLUS | 380 | PLUS | 381 | PLUS | 382 | PLUS | 383 | PLUS | 384 | PLUS | 385 | PLUS | 386 | PLUS | 387 | PLUS | 388 | PLUS | 389 | PLUS | 390 | PLUS | 391 | PLUS | 392 | PLUS | 393 | PLUS | 394 | PLUS | 395 | PLUS | 396 | PLUS | 397 | PLUS | 398 | PLUS | 399 | PLUS | 400 | 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PLUS | 478 | PLUS | 479 | PLUS | 480 | PLUS | 481 | PLUS | 482 | PLUS | 483 | PLUS | 484 | PLUS | 485 | PLUS | 486 | PLUS | 487 | PLUS | 488 | PLUS | 489 | PLUS | 490 | PLUS | 491 | PLUS | 492 | PLUS | 493 | PLUS | 494 | PLUS | 495 | PLUS | 496 | PLUS | 497 | PLUS | 498 | PLUS | 499 | PLUS | 500 | PLUS | 501 | PLUS | 502 | PLUS | 503 | PLUS | 504 | PLUS | 505 | PLUS | 506 | PLUS | 507 | PLUS | 508 | PLUS | 509 | PLUS | 510 | PLUS | 511 | PLUS | 512 | PLUS | 513 | PLUS | 514 | PLUS | 515 | PLUS | 516 | PLUS | 517 | PLUS | 518 | PLUS | 519 | PLUS | 520 | PLUS | 521 | PLUS | 522 | PLUS | 523 | PLUS | 524 | PLUS | 525 | PLUS | 526 | PLUS | 527 | PLUS | 528 | PLUS | 529 | PLUS | 530 | PLUS | 531 | PLUS | 532 | PLUS | 533 | PLUS | 534 | PLUS | 535 | PLUS | 536 | PLUS | 537 | PLUS | 538 | PLUS | 539 | PLUS | 540 | PLUS | 541 | PLUS | 542 | PLUS | 543 | PLUS | 544 | PLUS | 545 | PLUS | 546 | PLUS | 547 | PLUS | 548 | PLUS | 549 | PLUS | 550 | PLUS | 551 | PLUS | 552 | PLUS | 553 | PLUS | 554 | PLUS | 555 | PLUS | 556 | PLUS | 557 | PLUS | 558 | PLUS | 559 | PLUS | 560 | PLUS | 561 | PLUS | 562 | PLUS | 563 | PLUS | 564 | PLUS | 565 | PLUS | 566 | PLUS | 567 | PLUS | 568 | PLUS | 569 | PLUS | 570 | PLUS | 571 | PLUS | 572 | PLUS | 573 | PLUS | 574 | PLUS | 575 | PLUS | 576 | PLUS | 577 | PLUS | 578 | PLUS | 579 | PLUS | 580 | PLUS | 581 | PLUS | 582 | PLUS | 583 | PLUS | 584 | PLUS | 585 | PLUS | 586 | PLUS | 587 | PLUS | 588 | PLUS | 589 | PLUS | 590 | PLUS | 591 | PLUS | 592 | PLUS | 593 | PLUS | 594 | PLUS | 595 | PLUS | 596 | PLUS | 597 | PLUS | 598 | PLUS | 599 | PLUS | 600 | PLUS | 601 | PLUS | 602 | PLUS | 603 | PLUS | 604 | PLUS | 605 | PLUS | 606 | PLUS | 607 | PLUS | 608 | PLUS | 609 | PLUS | 610 | PLUS | 611 | PLUS | 612 | PLUS | 613 | PLUS | 614 | PLUS | 615 | PLUS | 616 | PLUS | 617 | PLUS | 618 | PLUS | 619 | PLUS | 620 | PLUS | 621 | PLUS | 622 | PLUS | 623 | PLUS | 624 | PLUS | 625 | PLUS | 626 | PLUS | 627 | PLUS | 628 | PLUS | 629 | PLUS | 630 | PLUS | 631 | 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PLUS | 709 | PLUS | 710 | PLUS | 711 | PLUS | 712 | PLUS | 713 | PLUS | 714 | PLUS | 715 | PLUS | 716 | PLUS | 717
 | PLUS | 718 | PLUS | 719 | PLUS | 720 | PLUS | 721 | PLUS | 722 | PLUS | 723 | PLUS | 724 | PLUS | 725 | PLUS | 726 | PLUS | 727 | PLUS | 728 | PLUS | 729 | PLUS | 730 | PLUS | 731 | PLUS | 732 | PLUS | 733 | PLUS | 734 | PLUS | 735 | PLUS | 736 | PLUS | 737 | PLUS | 738 | PLUS | 739 | PLUS | 740 | PLUS | 741 | PLUS | 742 | PLUS | 743 | PLUS | 744 | PLUS | 745 | PLUS | 746 | PLUS | 747 | PLUS | 748 | PLUS | 749 | PLUS | 750 | PLUS | 751 | PLUS | 752 | PLUS | 753 | PLUS | 754 | PLUS | 755 | PLUS | 756 | PLUS | 757 | PLUS | 758 | PLUS | 759 | PLUS | 760 | PLUS | 761 | PLUS | 762 | PLUS | 763 | PLUS | 764 | PLUS | 765 | PLUS | 766 | PLUS | 767 | PLUS | 768 | PLUS | 769 | PLUS | 770 | PLUS | 771 | PLUS | 772 | PLUS | 773 | PLUS | 774 | PLUS | 775 | PLUS | 776 | PLUS | 777 | PLUS | 778 | PLUS | 779 | PLUS | 780 | PLUS | 781 | PLUS | 782 | PLUS | 783 | PLUS | 784 | PLUS | 785 | PLUS | 786 | PLUS | 787 | PLUS | 788 | PLUS | 789 | PLUS | 790 | PLUS | 791 | PLUS | 792 | PLUS | 793 | PLUS | 794 | PLUS | 795 | PLUS | 796 | PLUS | 797 | |
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 | | | | | | | | | | 1 | NO | RATE | 2 | NO | RATE | 3 | NO | RATE | 4 | NO | RATE | TOTAL ACRES | TOTAL | ASSESSMENT | | | | | | | | | | | | | | | | | | | | | | | | | | |

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 | RATE | 2 | NO | RATE | 3 | NO | RATE | 4 | NO | RATE | TOTAL ACRES | TOTAL | ASSESSMENT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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 | PLUS | 2 | PLUS | 3 | PLUS | 4 | PLUS | 5 | PLUS | 6 | PLUS | 7 | PLUS | 8 | PLUS | 9 | PLUS | 10 | PLUS | 11 | PLUS | 12 | PLUS | 13 | PLUS | 14 | PLUS | 15 | PLUS | 16 | PLUS | 17 | PLUS | 18 | PLUS | 19 | PLUS | 20 | PLUS | 21 | PLUS

 | 22 | PLUS | 23 | PLUS | 24 | PLUS | 25 | PLUS | 26 | PLUS | 27 | PLUS | 28 | PLUS | 29 | PLUS | 30 | PLUS | 31 | PLUS | 32 | PLUS | 33 | PLUS | 34 | PLUS | 35 | PLUS | 36 | PLUS | 37 | PLUS | 38 | PLUS | 39 | PLUS | 40 | PLUS | 41 | PLUS | 42 | PLUS | 43 | PLUS | 44 | PLUS | 45 | PLUS | 46 | PLUS | 47 | PLUS | 48 | PLUS | 49 | PLUS | 50 | PLUS | 51 | PLUS | 52 | PLUS | 53 | PLUS | 54 | PLUS | 55 | PLUS | 56 | PLUS | 57 | PLUS | 58 | PLUS | 59 | PLUS | 60 | PLUS | 61 | PLUS | 62 | PLUS | 63 | PLUS | 64 | PLUS | 65 | PLUS | 66 | PLUS | 67 | PLUS | 68 | PLUS | 69 | PLUS | 70 | PLUS | 71 | PLUS | 72 | PLUS | 73 | PLUS | 74 | PLUS | 75 | PLUS | 76 | PLUS | 77 | PLUS | 78 | PLUS | 79 | PLUS | 80 | PLUS | 81 | PLUS | 82 | PLUS | 83 | PLUS | 84 | PLUS | 85 | PLUS | 86 | PLUS | 87 | PLUS | 88 | PLUS | 89 | PLUS | 90 | PLUS | 91 | PLUS | 92 | PLUS | 93 | PLUS | 94 | PLUS | 95 | PLUS | 96 | PLUS | 97 | PLUS | 98 | PLUS | 99 | PLUS | 100 | PLUS | 101 | PLUS | 102 | PLUS | 103 | PLUS | 104 | PLUS | 105 | PLUS | 106 | PLUS | 107 | PLUS | 108 | PLUS | 109 | PLUS | 110 | PLUS | 111 | PLUS | 112 | PLUS | 113 | PLUS | 114 | PLUS | 115 | PLUS | 116 | PLUS | 117 | PLUS | 118 | PLUS | 119 | PLUS | 120 | PLUS | 121 | PLUS | 122 | PLUS | 123 | PLUS | 124 | PLUS | 125 | PLUS | 126 | PLUS | 127 | PLUS | 128 | PLUS | 129 | PLUS | 130 | PLUS | 131 | PLUS | 132 | PLUS | 133 | PLUS | 134 | PLUS | 135 | PLUS | 136 | PLUS | 137 | PLUS | 138 | PLUS | 139 | PLUS | 140 | PLUS | 141 | PLUS | 142 | PLUS | 143 | PLUS | 144 | PLUS | 145 | PLUS | 146 | PLUS | 147 | PLUS | 148 | PLUS | 149 | PLUS | 150 | PLUS | 151 | PLUS | 152 | PLUS | 153 | PLUS | 154 | PLUS | 155 | PLUS | 156 | PLUS | 157 | PLUS | 158 | PLUS | 159 | PLUS | 160 | PLUS | 161 | PLUS | 162 | PLUS | 163 | PLUS | 164 | PLUS | 165 | PLUS | 166 | PLUS | 167 | PLUS | 168 | PLUS | 169 | PLUS | 170 | PLUS | 171 | PLUS | 172 | PLUS | 173 | PLUS | 174 | PLUS | 175 | PLUS | 176 | PLUS | 177 | PLUS | 178 | PLUS | 179 | PLUS | 180 | PLUS | 181 | PLUS | 182 | PLUS | 183 | PLUS | 184 | PLUS | 185 | PLUS | 186 | PLUS | 187 | PLUS | 188 | PLUS | 189 | PLUS | 190 | PLUS | 191 | PLUS | 192 | PLUS | 193 | PLUS | 194 | PLUS | 195 | PLUS | 196 | PLUS | 197 | PLUS | 198 | PLUS | 199 | PLUS | 200 | PLUS | 201 | PLUS | 202 | PLUS | 203 | PLUS | 204 | PLUS | 205 | PLUS | 206 | PLUS | 207 | PLUS | 208 | PLUS | 209 | PLUS | 210 | PLUS | 211 | PLUS | 212 | PLUS | 213 | PLUS | 214 | PLUS | 215 | PLUS | 216 | PLUS | 217 | PLUS | 218 | PLUS | 219 | PLUS | 220 | PLUS | 221 | PLUS | 222 | PLUS | 223 | PLUS | 224 | PLUS | 225 | PLUS | 226 | PLUS | 227 | PLUS | 228 | PLUS | 229 | PLUS | 230 | PLUS | 231 | PLUS | 232 | PLUS | 233 | PLUS | 234 | PLUS | 235 | PLUS | 236 | PLUS | 237 | PLUS | 238 | PLUS | 239 | PLUS | 240 | PLUS | 241 | PLUS | 242 | PLUS | 243 | PLUS | 244 | PLUS | 245 | PLUS | 246 | PLUS | 247 | PLUS | 248 | PLUS | 249 | PLUS | 250 | PLUS | 251 | PLUS | 252 | PLUS | 253 | PLUS | 254 | PLUS | 255 | PLUS | 256 | PLUS | 257 | PLUS | 258 | PLUS | 259 | PLUS | 260 | PLUS | 261 | PLUS | 262 | PLUS | 263 | PLUS | 264 | PLUS | 265 | PLUS | 266 | PLUS | 267 | PLUS | 268 | PLUS | 269 | PLUS | 270 | PLUS | 271 | PLUS | 272 | PLUS | 273 | PLUS | 274 | PLUS | 275 | PLUS | 276 | PLUS | 277 | PLUS | 278 | PLUS | 279 | PLUS | 280 | PLUS | 281 | PLUS | 282 | PLUS | 283 | PLUS | 284 | PLUS | 285 | PLUS | 286 | PLUS | 287 | PLUS | 288 | PLUS | 289 | PLUS | 290 | PLUS | 291 | PLUS | 292 | PLUS | 293 | PLUS | 294 | PLUS | 295 | PLUS | 296 | PLUS | 297 | PLUS | 298 | PLUS | 299 | PLUS | 300 | PLUS | 301 | PLUS | 302 | PLUS | 303 | PLUS | 304 | PLUS | 305 | PLUS | 306 | PLUS | 307 | PLUS | 308 | PLUS | 309 | PLUS | 310 | PLUS | 311 | PLUS | 312 | PLUS | 313 | PLUS | 314 | PLUS | 315 | PLUS | 316 | PLUS | 317 | PLUS | 318 | PLUS | 319 | PLUS | 320 | PLUS | 321 | PLUS | 322 | PLUS | 323 | PLUS | 324 | PLUS | 325 | PLUS | 326 | PLUS | 327 | PLUS | 328 | PLUS | 329 | PLUS | 330 | PLUS | 331 | PLUS | 332 | PLUS | 333 | PLUS | 334 | PLUS | 335 | PLUS | 336 | PLUS | 337 | PLUS | 338 | PLUS | 339 | PLUS | 340 | PLUS | 341 | PLUS | 342 | PLUS | 343 | PLUS | 344 | PLUS | 345 | PLUS | 346 | PLUS | 347 | PLUS | 348 | PLUS | 349 | PLUS | 350 | PLUS | 351 | PLUS | 352 | PLUS | 353 | PLUS | 354 | PLUS | 355 | PLUS | 356 | PLUS | 357 | PLUS | 358 | PLUS | 359 | PLUS | 360 | PLUS | 361 | PLUS | 362 | PLUS | 363 | PLUS | 364 | PLUS | 365 | PLUS | 366 | PLUS | 367 | PLUS | 368 | PLUS | 369 | PLUS | 370 | PLUS | 371 | PLUS | 372 | PLUS | 373 | PLUS | 374 | PLUS | 375 | PLUS | 376 | PLUS | 377 | PLUS | 378 | PLUS | 379 | PLUS | 380 | PLUS | 381 | PLUS | 382 | PLUS | 383 | PLUS | 384 | PLUS | 385 | PLUS | 386 | PLUS | 387 | PLUS | 388 | PLUS | 389 | PLUS | 390 | PLUS | 391 | PLUS | 392 | PLUS | 393 | PLUS | 394 | PLUS | 395 | PLUS | 396 | PLUS | 397 | PLUS | 398 | PLUS | 399 | PLUS | 400 | PLUS | 401 | PLUS | 402 | PLUS | 403 | PLUS | 404 | PLUS | 405 | PLUS | 406 | PLUS | 407 | PLUS | 408 | PLUS | 409 | PLUS | 410 | PLUS | 411 | PLUS | 412 | PLUS | 413 | PLUS | 414 | PLUS | 415 | PLUS | 416 | PLUS | 417 | PLUS | 418 | PLUS | 419 | PLUS | 420 | PLUS | 421 | PLUS | 422 | PLUS | 423 | PLUS | 424 | PLUS | 425 | PLUS | 426 | PLUS | 427 | PLUS | 428 | PLUS | 429 | PLUS | 430 | PLUS | 431 | PLUS | 432 | PLUS | 433 | PLUS | 434 | PLUS | 435 | PLUS | 436 | PLUS | 437 | PLUS | 438 | PLUS | 439 | PLUS | 440 | PLUS | 441 | PLUS | 442 | PLUS | 443 | PLUS | 444 | PLUS | 445 | PLUS | 446 | PLUS | 447 | PLUS | 448 | PLUS | 449 | PLUS | 450 | PLUS | 451 | PLUS | 452 | PLUS | 453 | PLUS | 454 | PLUS | 455 | PLUS | 456 | PLUS | 457 | PLUS | 458 | PLUS | 459 | PLUS | 460 | PLUS | 461 | PLUS | 462 | PLUS | 463 | PLUS | 464 | PLUS | 465 | PLUS | 466 | PLUS | 467 | PLUS | 468 | PLUS | 469 | PLUS | 470 | PLUS | 471 | PLUS | 472 | PLUS | 473 | PLUS | 474 | PLUS | 475 | PLUS | 476 | PLUS | 477 | PLUS | 478 | PLUS | 479 | PLUS | 480 | PLUS | 481 | PLUS | 482 | PLUS | 483 | PLUS | 484 | PLUS | 485 | PLUS | 486 | PLUS | 487 | PLUS | 488 | PLUS | 489 | PLUS | 490 | PLUS | 491 | PLUS | 492 | PLUS | 493 | PLUS | 494 | PLUS | 495 | PLUS | 496 | PLUS | 497 | PLUS | 498 | PLUS | 499 | PLUS | 500 | PLUS | 501 | PLUS | 502 | PLUS | 503 | PLUS | 504 | PLUS | 505 | PLUS | 506 | PLUS | 507 | PLUS | 508 | PLUS | 509 | PLUS | 510 | PLUS | 511 | PLUS | 512 | PLUS | 513 | PLUS | 514 | PLUS | 515 | PLUS | 516 | PLUS | 517 | PLUS | 518 | PLUS | 519 | PLUS | 520 | PLUS | 521 | PLUS | 522 | PLUS | 523 | PLUS | 524 | PLUS | 525 | PLUS | 526 | PLUS | 527 | PLUS | 528 | PLUS | 529 | PLUS | 530 | PLUS | 531 | PLUS | 532 | PLUS | 533 | PLUS | 534 | PLUS | 535 | PLUS | 536 | PLUS | 537 | PLUS | 538 | PLUS | 539 | PLUS | 540 | PLUS | 541 | PLUS | 542 | PLUS | 543 | PLUS | 544 | PLUS | 545 | PLUS | 546 | PLUS | 547 | PLUS | 548 | PLUS | 549 | PLUS | 550 | PLUS | 551 | PLUS | 552 | PLUS | 553 | PLUS | 554 | PLUS | 555 | PLUS | 556 | PLUS | 557 | PLUS | 558 | PLUS | 559 | PLUS | 560 | PLUS | 561 | PLUS | 562 | PLUS | 563 | PLUS | 564 | PLUS | 565 | PLUS | 566 | PLUS | 567 | PLUS | 568 | PLUS | 569 | PLUS | 570 | PLUS | 571 | PLUS | 572 | PLUS | 573 | PLUS | 574 | PLUS | 575 | PLUS | 576 | PLUS | 577 | PLUS | 578 | PLUS | 579 | PLUS | 580 | PLUS | 581 | PLUS | 582 | PLUS | 583 | PLUS | 584 | PLUS | 585 | PLUS | 586 | PLUS | 587 | PLUS | 588 | PLUS | 589 | PLUS | 590 | PLUS | 591 | PLUS | 592 | PLUS | 593 | PLUS | 594 | PLUS | 595 | PLUS | 596 | PLUS | 597 | PLUS | 598 | PLUS | 599 | PLUS | 600 | PLUS | 601 | PLUS | 602 | PLUS | 603 | PLUS | 604 | PLUS | 605 | PLUS | 606 | PLUS | 607 | PLUS | 608 | PLUS | 609 | PLUS | 610 | PLUS | 611 | PLUS | 612 | PLUS | 613 | PLUS | 614 | PLUS | 615 | PLUS | 616 | PLUS | 617 | PLUS | 618 | PLUS | 619 | PLUS | 620 | PLUS | 621 | PLUS | 622 | PLUS | 623 | PLUS | 624 | PLUS | 625 | PLUS | 626 | PLUS | 627 | PLUS | 628 | PLUS | 629 | PLUS | 630 | PLUS | 631 | PLUS | 632 | PLUS | 633 | PLUS | 634 | PLUS | 635 | PLUS | 636 | PLUS | 637 | PLUS | 638 | PLUS | 639 | PLUS | 640 | PLUS | 641 | PLUS | 642 | PLUS | 643 | PLUS | 644 | PLUS | 645 | PLUS | 646 | PLUS | 647 | PLUS | 648 | PLUS | 649 | PLUS | 650 | PLUS | 651 | PLUS | 652 | PLUS | 653 | PLUS | 654 | PLUS | 655 | PLUS | 656 | PLUS | 657 | PLUS | 658 | PLUS | 659 | PLUS | 660 | PLUS | 661 | PLUS | 662 | PLUS | 663 | PLUS | 664 | PLUS | 665 | PLUS | 666 | PLUS | 667 | PLUS | 668 | PLUS | 669 | PLUS | 670 | PLUS | 671 | PLUS | 672 | PLUS
 673 | PLUS | 674 | PLUS | 675 | PLUS | 676 | PLUS | 677 | PLUS | 678 | PLUS | 679 | PLUS | 680 | PLUS | 681 | PLUS | 682 | PLUS | 683 | PLUS | 684 | PLUS | 685 | PLUS | 686 | PLUS | 687 | PLUS | 688 | PLUS | 689 | PLUS | 690 | PLUS | 691 | PLUS | 692 | PLUS | 693 | PLUS | 694 | PLUS | 695 | PLUS | 696 | PLUS | 697 | PLUS | 698 | PLUS | 699 | PLUS | 700 | PLUS | 701 | PLUS | 702 | PLUS | 703 | PLUS | 704 | PLUS | 705 | PLUS | 706 | PLUS | 707 | PLUS | 708 | PLUS | 709 | PLUS | 710 | PLUS | 711 | PLUS | 712 | PLUS | 713 | PLUS | 714 | PLUS | 715 | PLUS | 716 | PLUS | 717 | PLUS | 718 | PLUS | 719 | PLUS | 720 | PLUS | 721 | PLUS | 722 | PLUS | 723 | PLUS | 724 | PLUS | 725 | PLUS | 726 | PLUS | 727 | PLUS | 728 | PLUS | 729 | PLUS | 730 | PLUS | 731 | PLUS | 732 | PLUS | 733 | PLUS | 734 | PLUS | 735 | PLUS | 736 | PLUS | 737 | PLUS | 738 | PLUS | 739 | PLUS | 740 | PLUS | 741 | PLUS | 742 | PLUS | 743 | PLUS | 744 | PLUS | 745 | PLUS | 746 | PLUS | 747 | PLUS | 748 | PLUS | 749 | PLUS | 750 | PLUS | 751 | PLUS | 752 | PLUS | 753 | PLUS | 754 | PLUS | 755 | PLUS | 756 | PLUS | 757 | PLUS | 758 | PLUS | 759 | PLUS | 760 | PLUS | 761 | PLUS | 762 | PLUS | 763 | PLUS | 764 | PLUS | 765 | PLUS | 766 | PLUS | 767 | PLUS | 768 | PLUS | 769 | PLUS | 770 | PLUS | 771 | PLUS | 772 | PLUS | 773 | PLUS | 774 | PLUS | 775 | PLUS | 776 | PLUS | 777 | PLUS | 778 | PLUS | 779 | PLUS | 780 | PLUS | 781 | PLUS | 782 | PLUS | 783 | PLUS | 784 | PLUS | 785 | PLUS | 786 | PLUS | 787 | PLUS | 788 | PLUS | 789 | PLUS | 790 | PLUS | 791 | PLUS | 792 | PLUS | 793 | PLUS | 794 | PLUS | 795 | PLUS | 796 | PLUS | 797 | | | | |
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 | PLUS

 | 2 | PLUS | 3 | PLUS | 4 | PLUS | 5 | PLUS | 6 | PLUS | 7 | PLUS | 8 | PLUS | 9 | PLUS | 10 | PLUS | 11 | PLUS | 12 | PLUS | 13 | PLUS | 14 | PLUS | 15 | PLUS | 16 | PLUS | 17 | PLUS | 18 | PLUS | 19 | PLUS | 20 | PLUS | 21 | PLUS | 22 | PLUS | 23 | PLUS | 24 | PLUS | 25 | PLUS | 26 | PLUS | 27

 | PLUS | 28 | PLUS | 29 | PLUS | 30 | PLUS | 31 | PLUS | 32 | PLUS | 33 | PLUS | 34 | PLUS | 35 | PLUS | 36 | PLUS | 37 | PLUS | 38 | PLUS | 39 | PLUS | 40 | PLUS | 41 | PLUS | 42 | PLUS | 43 | PLUS | 44 | PLUS | 45 | PLUS | 46 | PLUS | 47 | PLUS | 48 | PLUS | 49 | PLUS | 50 | PLUS | 51 | PLUS | 52 | PLUS | 53 | PLUS | 54 | PLUS | 55 | PLUS | 56 | PLUS | 57 | PLUS | 58 | PLUS | 59 | PLUS | 60 | PLUS | 61 | PLUS | 62 | PLUS | 63 | PLUS | 64 | PLUS | 65 | PLUS | 66 | PLUS | 67 | PLUS | 68 | PLUS | 69 | PLUS | 70 | PLUS | 71 | PLUS | 72 | PLUS | 73 | PLUS | 74 | PLUS | 75 | PLUS | 76 | PLUS | 77 | PLUS | 78 | PLUS | 79 | PLUS | 80 | PLUS | 81 | PLUS | 82 | PLUS | 83 | PLUS | 84 | PLUS | 85 | PLUS | 86 | PLUS | 87 | PLUS | 88 | PLUS | 89 | PLUS | 90 | PLUS | 91 | PLUS | 92 | PLUS | 93 | PLUS | 94 | PLUS | 95 | PLUS | 96 | PLUS | 97 | PLUS | 98 | PLUS | 99 | PLUS | 100 | PLUS | 101 | PLUS | 102 | PLUS | 103 | PLUS | 104 | PLUS | 105 | PLUS | 106 | PLUS | 107 | PLUS | 108 | PLUS | 109 | PLUS | 110 | PLUS | 111 | PLUS | 112 | PLUS | 113 | PLUS | 114 | PLUS | 115 | PLUS | 116 | PLUS | 117 | PLUS | 118 | PLUS | 119 | PLUS | 120 | PLUS | 121 | PLUS | 122 | PLUS | 123 | PLUS | 124 | PLUS | 125 | PLUS | 126 | PLUS | 127 | PLUS | 128 | PLUS | 129 | PLUS | 130 | PLUS | 131 | PLUS | 132 | PLUS | 133 | PLUS | 134 | PLUS | 135 | PLUS | 136 | PLUS | 137 | PLUS | 138 | PLUS | 139 | PLUS | 140 | PLUS | 141 | PLUS | 142 | PLUS | 143 | PLUS | 144 | PLUS | 145 | PLUS | 146 | PLUS | 147 | PLUS | 148 | PLUS | 149 | PLUS | 150 | PLUS | 151 | PLUS | 152 | PLUS | 153 | PLUS | 154 | PLUS | 155 | PLUS | 156 | PLUS | 157 | PLUS | 158 | PLUS | 159 | PLUS | 160 | PLUS | 161 | PLUS | 162 | PLUS | 163 | PLUS | 164 | PLUS | 165 | PLUS | 166 | PLUS | 167 | PLUS | 168 | PLUS | 169 | PLUS | 170 | PLUS | 171 | PLUS | 172 | PLUS | 173 | PLUS | 174 | PLUS | 175 | PLUS | 176 | PLUS | 177 | PLUS | 178 | PLUS | 179 | PLUS | 180 | PLUS | 181 | PLUS | 182 | PLUS | 183 | PLUS | 184 | PLUS | 185 | PLUS | 186 | PLUS | 187 | PLUS | 188 | PLUS | 189 | PLUS | 190 | PLUS | 191 | PLUS | 192 | PLUS | 193 | PLUS | 194 | PLUS | 195 | PLUS | 196 | PLUS | 197 | PLUS | 198 | PLUS | 199 | PLUS | 200 | PLUS | 201 | PLUS | 202 | PLUS | 203 | PLUS | 204 | PLUS | 205 | PLUS | 206 | PLUS | 207 | PLUS | 208 | PLUS | 209 | PLUS | 210 | PLUS | 211 | PLUS | 212 | PLUS | 213 | PLUS | 214 | PLUS | 215 | PLUS | 216 | PLUS | 217 | PLUS | 218 | PLUS | 219 | PLUS | 220 | PLUS | 221 | PLUS | 222 | PLUS | 223 | PLUS | 224 | PLUS | 225 | PLUS | 226 | PLUS | 227 | PLUS | 228 | PLUS | 229 | PLUS | 230 | PLUS | 231 | PLUS | 232 | PLUS | 233 | PLUS | 234 | PLUS | 235 | PLUS | 236 | PLUS | 237 | PLUS | 238 | PLUS | 239 | PLUS | 240 | PLUS | 241 | PLUS | 242 | PLUS | 243 | PLUS | 244 | PLUS | 245 | PLUS | 246 | PLUS | 247 | PLUS | 248 | PLUS | 249 | PLUS | 250 | PLUS | 251 | PLUS | 252 | PLUS | 253 | PLUS | 254 | PLUS | 255 | PLUS | 256 | PLUS | 257 | PLUS | 258 | PLUS | 259 | PLUS | 260 | PLUS | 261 | PLUS | 262 | PLUS | 263 | PLUS | 264 | PLUS | 265 | PLUS | 266 | PLUS | 267 | PLUS | 268 | PLUS | 269 | PLUS | 270 | PLUS | 271 | PLUS | 272 | PLUS | 273 | PLUS | 274 | PLUS | 275 | PLUS | 276 | PLUS | 277 | PLUS | 278 | PLUS | 279 | PLUS | 280 | PLUS | 281 | PLUS | 282 | PLUS | 283 | PLUS | 284 | PLUS | 285 | PLUS | 286 | PLUS | 287 | PLUS | 288 | PLUS | 289 | PLUS | 290 | PLUS | 291 | PLUS | 292 | PLUS | 293 | PLUS | 294 | PLUS | 295 | PLUS | 296 | PLUS | 297 | PLUS | 298 | PLUS | 299 | PLUS | 300 | PLUS | 301 | PLUS | 302 | PLUS | 303 | PLUS | 304 | PLUS | 305 | PLUS | 306 | PLUS | 307 | PLUS | 308 | PLUS | 309 | PLUS | 310 | PLUS | 311 | PLUS | 312 | PLUS | 313 | PLUS | 314 | PLUS | 315 | PLUS | 316 | PLUS | 317 | PLUS | 318 | PLUS | 319 | PLUS | 320 | PLUS | 321 | PLUS | 322 | PLUS | 323 | PLUS | 324 | PLUS | 325 | PLUS | 326 | PLUS | 327 | PLUS | 328 | PLUS | 329 | PLUS | 330 | PLUS | 331 | PLUS | 332 | PLUS | 333 | PLUS | 334 | PLUS | 335 | PLUS | 336 | PLUS | 337 | PLUS | 338 | PLUS | 339 | PLUS | 340 | PLUS | 341 | PLUS | 342 | PLUS | 343 | PLUS | 344 | PLUS | 345 | PLUS | 346 | PLUS | 347 | PLUS | 348 | PLUS | 349 | PLUS | 350 | PLUS | 351 | PLUS | 352 | PLUS | 353 | PLUS | 354 | PLUS | 355 | PLUS | 356 | PLUS | 357 | PLUS | 358 | PLUS | 359 | PLUS | 360 | PLUS | 361 | PLUS | 362 | PLUS | 363 | PLUS | 364 | PLUS | 365 | PLUS | 366 | PLUS | 367 | PLUS | 368 | PLUS | 369 | PLUS | 370 | PLUS | 371 | PLUS | 372 | PLUS | 373 | PLUS | 374 | PLUS | 375 | PLUS | 376 | PLUS | 377 | PLUS | 378 | PLUS | 379 | PLUS | 380 | PLUS | 381 | PLUS | 382 | PLUS | 383 | PLUS | 384 | PLUS | 385 | PLUS | 386 | PLUS | 387 | PLUS | 388 | PLUS | 389 | PLUS | 390 | PLUS | 391 | PLUS | 392 | PLUS | 393 | PLUS | 394 | PLUS | 395 | PLUS | 396 | PLUS | 397 | PLUS | 398 | PLUS | 399 | PLUS | 400 | PLUS | 401 | PLUS | 402 | PLUS | 403 | PLUS | 404 | PLUS | 405 | PLUS | 406 | PLUS | 407 | PLUS | 408 | PLUS | 409 | PLUS | 410 | PLUS | 411 | PLUS | 412 | PLUS | 413 | PLUS | 414 | PLUS | 415 | PLUS | 416 | PLUS | 417 | PLUS | 418 | PLUS | 419 | PLUS | 420 | PLUS | 421 | PLUS | 422 | PLUS | 423 | PLUS | 424 | PLUS | 425 | PLUS | 426 | PLUS | 427 | PLUS | 428 | PLUS | 429 | PLUS | 430 | PLUS | 431 | PLUS | 432 | PLUS | 433 | PLUS | 434 | PLUS | 435 | PLUS | 436 | PLUS | 437 | PLUS | 438 | PLUS | 439 | PLUS | 440 | PLUS | 441 | PLUS | 442 | PLUS | 443 | PLUS | 444 | PLUS | 445 | PLUS | 446 | PLUS | 447 | PLUS | 448 | PLUS | 449 | PLUS | 450 | PLUS | 451 | PLUS | 452 | PLUS | 453 | PLUS | 454 | PLUS | 455 | PLUS | 456 | PLUS | 457 | PLUS | 458 | PLUS | 459 | PLUS | 460 | PLUS | 461 | PLUS | 462 | PLUS | 463 | PLUS | 464 | PLUS | 465 | PLUS | 466 | PLUS | 467 | PLUS | 468 | PLUS | 469 | PLUS | 470 | PLUS | 471 | PLUS | 472 | PLUS | 473 | PLUS | 474 | PLUS | 475 | PLUS | 476 | PLUS | 477 | PLUS | 478 | PLUS | 479 | PLUS | 480 | PLUS | 481 | PLUS | 482 | PLUS | 483 | PLUS | 484 | PLUS | 485 | PLUS | 486 | PLUS | 487 | PLUS | 488 | PLUS | 489 | PLUS | 490 | PLUS | 491 | PLUS | 492 | PLUS | 493 | PLUS | 494 | PLUS | 495 | PLUS | 496 | PLUS | 497 | PLUS | 498 | PLUS | 499 | PLUS | 500 | PLUS | 501 | PLUS | 502 | PLUS | 503 | PLUS | 504 | PLUS | 505 | PLUS | 506 | PLUS | 507 | PLUS | 508 | PLUS | 509 | PLUS | 510 | PLUS | 511 | PLUS | 512 | PLUS | 513 | PLUS | 514 | PLUS | 515 | PLUS | 516 | PLUS | 517 | PLUS | 518 | PLUS | 519 | PLUS | 520 | PLUS | 521 | PLUS | 522 | PLUS | 523 | PLUS | 524 | PLUS | 525 | PLUS | 526 | PLUS | 527 | PLUS | 528 | PLUS | 529 | PLUS | 530 | PLUS | 531 | PLUS | 532 | PLUS | 533 | PLUS | 534 | PLUS | 535 | PLUS | 536 | PLUS | 537 | PLUS | 538 | PLUS | 539 | PLUS | 540 | PLUS | 541 | PLUS | 542 | PLUS | 543 | PLUS | 544 | PLUS | 545 | PLUS | 546 | PLUS | 547 | PLUS | 548 | PLUS | 549 | PLUS | 550 | PLUS | 551 | PLUS | 552 | PLUS | 553 | PLUS | 554 | PLUS | 555 | PLUS | 556 | PLUS | 557 | PLUS | 558 | PLUS | 559 | PLUS | 560 | PLUS | 561 | PLUS | 562 | PLUS | 563 | PLUS | 564 | PLUS | 565 | PLUS | 566 | PLUS | 567 | PLUS | 568 | PLUS | 569 | PLUS | 570 | PLUS | 571 | PLUS | 572 | PLUS | 573 | PLUS | 574 | PLUS | 575 | PLUS | 576 | PLUS | 577 | PLUS | 578 | PLUS | 579 | PLUS | 580 | PLUS | 581 | PLUS | 582 | PLUS | 583 | PLUS | 584 | PLUS | 585 | PLUS | 586 | PLUS | 587 | PLUS | 588 | PLUS | 589 | PLUS | 590 | PLUS | 591 | PLUS | 592 | PLUS | 593 | PLUS | 594 | PLUS | 595 | PLUS | 596 | PLUS | 597 | PLUS | 598 | PLUS | 599 | PLUS | 600 | PLUS | 601 | PLUS | 602 | PLUS | 603 | PLUS | 604 | PLUS | 605 | PLUS | 606 | PLUS | 607 | PLUS | 608 | PLUS | 609 | PLUS | 610 | PLUS | 611 | PLUS | 612 | PLUS | 613 | PLUS | 614 | PLUS | 615 | PLUS | 616 | PLUS | 617 | PLUS | 618 | PLUS | 619 | PLUS | 620 | PLUS | 621 | PLUS | 622 | PLUS | 623 | PLUS | 624 | PLUS | 625 | PLUS | 626 | PLUS | 627 | PLUS | 628 | PLUS | 629 | PLUS | 630 | PLUS | 631 | PLUS | 632 | PLUS | 633 | PLUS | 634 | PLUS | 635 | PLUS | 636 | PLUS | 637 | PLUS | 638 | PLUS | 639 | PLUS | 640 | PLUS | 641 | PLUS | 642 | PLUS | 643 | PLUS | 644 | PLUS | 645 | PLUS | 646
 PLUS | 647 | PLUS | 648 | PLUS | 649 | PLUS | 650 | PLUS | 651 | PLUS | 652 | PLUS | 653 | PLUS | 654 | PLUS | 655 | PLUS | 656 | PLUS | 657 | PLUS | 658 | PLUS | 659 | PLUS | 660 | PLUS | 661 | PLUS | 662 | PLUS | 663 | PLUS | 664 | PLUS | 665 | PLUS | 666 | PLUS | 667 | PLUS | 668 | PLUS | 669 | PLUS | 670 | PLUS | 671 | PLUS | 672 | PLUS | 673 | PLUS | 674 | PLUS | 675 | PLUS | 676 | PLUS | 677 | PLUS | 678 | PLUS | 679 | PLUS | 680 | PLUS | 681 | PLUS | 682 | PLUS | 683 | PLUS | 684 | PLUS | 685 | PLUS | 686 | PLUS | 687 | PLUS | 688 | PLUS | 689 | PLUS | 690 | PLUS | 691 | PLUS | 692 | PLUS | 693 | PLUS | 694 | PLUS | 695 | PLUS | 696 | PLUS | 697 | PLUS | 698 | PLUS | 699 | PLUS | 700 | PLUS | 701 | PLUS | 702 | PLUS | 703 | PLUS | 704 | PLUS | 705 | PLUS | 706 | PLUS | 707 | PLUS | 708 | PLUS | 709 | PLUS | 710 | PLUS | 711 | PLUS | 712 | PLUS | 713 | PLUS | 714 | PLUS | 715 | PLUS | 716 | PLUS | 717 | PLUS | 718 | PLUS | 719 | PLUS | 720 | PLUS | 721 | PLUS | 722 | PLUS | 723 | PLUS | 724 | PLUS | 725 | PLUS | 726 | PLUS | 727 | PLUS | 728 | PLUS | 729 | PLUS | 730 | PLUS | 731 | PLUS | 732 | PLUS | 733 | PLUS | 734 | PLUS | 735 | PLUS | 736 | PLUS | 737 | PLUS | 738 | PLUS | 739 | PLUS | 740 | PLUS | 741 | PLUS | 742 | PLUS | 743 | PLUS | 744 | PLUS | 745 | PLUS | 746 | PLUS | 747 | PLUS | 748 | PLUS | 749 | PLUS | 750 | PLUS | 751 | PLUS | 752 | PLUS | 753 | PLUS | 754 | PLUS | 755 | PLUS | 756 | PLUS | 757 | PLUS | 758 | PLUS | 759 | PLUS | 760 | PLUS | 761 | PLUS | 762 | PLUS | 763 | PLUS | 764 | PLUS | 765 | PLUS | 766 | PLUS | 767 | PLUS | 768 | PLUS | 769 | PLUS | 770 | PLUS | 771 | PLUS | 772 | PLUS | 773 | PLUS | 774 | PLUS | 775 | PLUS | 776 | PLUS | 777 | PLUS | 778 | PLUS | 779 | PLUS | 780 | PLUS | 781 | PLUS | 782 | PLUS | 783 | PLUS | 784 | PLUS | 785 | PLUS | 786 | PLUS | 787 | PLUS | 788 | PLUS | 789 | PLUS | 790 | PLUS | 791 | PLUS | 792 | PLUS | 793 | PLUS | 794 | PLUS | 795 | PLUS | 796 | PLUS | 797 | | | | | | | | | | | | | |

APPENDIX 7

SAMPLE APPRAISAL REPORT

ALBERTA LANDS AND FORESTS

APPRAISAL REPORT

File No. SW 6-46-2-W5

1. Land SW Sec. 6 Tp. 46 Rge. 2 W. 5 Mer. Purpose of Appraisal Sale Application
 Name _____ Address _____ Rail Head 22 Miles
 Rural Residence - Land _____ Sec. _____ Tp. _____ Rge. _____ W. _____ Mer. _____
 Access to land Approximately 1/2 mile from a gravel road. No legal developed access.

2. Topography Gently rolling north east of muskeg. Moderately rolling south west of muskeg.

Cover Area NE of muskeg has been burnt over, thus cover is light poplar with few pine. Swamp spruce, tamarack, scrub birch in muskeg. Heavy cover SW muskeg. Merchantable Timber nil ?
 Refer to Forestry no ? Commercial Sand and Gravel nil Water Supply Intermittent creek.
 Carrying Capacity (Reason if not Zonal) 50 acres/hd/yr *(See "Remarks.." below)
 Land capability recreation rating 6 Commercial or Industrial Value nil ?
 Soil: _____

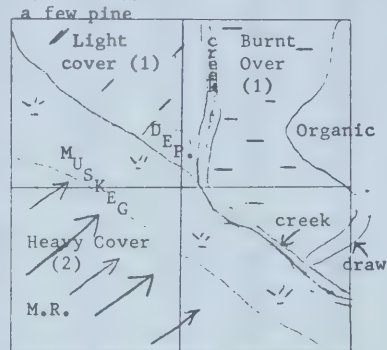
LH 1-2"

Ah nil-1/2"

Ae 6" loam to sandy loam

B sandy clay loam and clay loam to clay

	Acres	1	2	3	4
Rating: a - Great Sp	grey wooded	45	55	60	
b - Profile	normal	55	55	M	
c - Texture	sandy loam-clay loam	95	95	S	
d - Stones	some to many	75	75	k & dep.	
e - Topography	G.R. to M.R.	80	80	e	
		65	50	g	
	Basic Index	20	16		
TOTAL ARABLE ACRES	<u>nil</u>	Agr. Capability			
		Rating	5s	5t	0



	Acres	Cost to Clear Per Acre	Cost to Break Per Acre	Basic Index	Value Per Acre		Value for Area
					100 C.F.	250 C.F.	
Arable (a) (b) (c)	nil	\$ \$ \$	\$ \$ \$		\$ \$ \$	\$ \$ \$	\$ \$ \$
Non-Arable	160	Reasons	topography & muskeg	50-1	\$ 7.81	\$ 19.53	\$ 3,124.80
Cultivation (a) (b)	nil	(Exclusive of raw land value)			\$ \$	\$ \$	\$ \$
Total Acreage	160	In Crop _____ Acres _____			Total Value		\$ 3,124.80
					Average Value Per Acre		\$ 19.53

4. Improvements: (List all building improvements including well, pump, fence and summerfallow)

	Size	Material	Ownership	Value
nil				\$
				\$
				\$
				\$
				\$
Summerfallow _____ Acres @ \$ _____ per acre				\$

5. Remarks and Recommendations: This unit of land is not suitable for sale purposes, because of the non-arable rating, severe topography, muskeg and the creek. Recommend an RLC-2 land use restriction. This land is best suited for grazing with some potential for range improvement in the not so rough areas north east of the muskeg. Much of this area north east of muskeg has been logged out as numerous stumps are evident.

*(cont'd from "Carrying Capability")... Species Composition - Marsh Reed Grass (Calamagrostis Canadensis) Hairy Wild Rye (Elymus Innovatus) and various Carex Species.

Date of Inspection July 3, 1974Inspector D. Melnychuk

APPENDIX 8

HISTORICAL STREAMFLOW SUMMARY

INLAND WATERS DIRECTORATE

ENVIRONMENT CANADA

BOW RIVER AT BANFF - STATION NO. 05BB001

MONTHLY AND ANNUAL MEAN DISCHARGES IN CUBIC FEET PER SECOND FOR THE PERIOD OF RECORD

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	MEAN
1909	---	---	---	---	---	6210	5790	2470	1580	835	---	---	---
1910	---	---	---	---	3090	5350	4720	2780	1260	1210	---	---	---
1911	347	327	302	367	1240	6250	4440	2570	1500	680	415	380	1570
1912	291	267	224	295	1480	3430	3570	3530	1850	1020	584	430	1420
1913	321	280	256	412	1390	5620	3550	3030	1960	1010	603	399	1570
1914	350	315	285	399	1850	4920	4860	2600	1490	1220	581	359	1610
1915	287	277	266	563	1590	3230	4390	3560	1570	870	573	445	1480
1916	353	339	271	351	971	4910	5400	2690	1780	870	537	384	1580
1917	306	263	229	251	1740	3730	4330	2360	1270	1030	498	336	1370
1918	310	250	237	339	1440	5680	3450	2380	1500	950	486	367	1450
1919	300	256	194	339	2060	3710	2940	2650	1360	581	386	330	1270
1920	296	261	222	269	773	3010	6480	2880	1400	957	496	368	1460
1921	336	286	278	296	1770	4380	3560	2270	938	792	593	420	1330
1922	339	301	269	283	1740	4730	3200	2650	1650	962	493	328	1420
1923	310	294	305	371	1490	5630	3620	2440	1590	851	454	340	1480
1924	339	353	289	254	2320	3140	3370	2540	1490	712	462	349	1310
1925	317	284	234	529	3480	5060	3740	2590	1560	945	558	402	1650
1926	291	277	250	700	1440	2590	3380	2190	1640	842	494	310	1210
1927	273	255	262	316	933	5700	4920	3160	1760	1190	614	449	1660
1928	349	274	289	379	3890	5810	5470	2430	1290	640	382	270	1800
1929	224	192	222	228	1080	4430	2570	2350	1350	629	364	280	1160
1930	244	250	251	556	1940	5400	4360	2760	1580	687	394	279	1570
1931	253	228	213	270	1860	3970	3240	2130	1510	680	436	332	1260
1932	282	424	300	406	2130	6240	3660	2840	1590	717	416	321	1610
1933	275	272	266	385	1520	5820	4700	2460	1400	800	602	336	1570
1934	261	222	258	1024	4020	4090	3050	2130	1240	868	550	331	1510
1935	449	304	272	219	1410	5000	4800	2760	1400	676	364	265	1510
1936	221	215	225	185	2620	3610	2540	1880	1070	591	388	246	1170
1937	198	191	210	246	1340	3210	3020	1910	1310	801	689	361	1130
1938	316	261	274	324	1890	5470	3540	1700	1680	833	397	305	1420
1939	271	225	244	357	2310	2770	1690	2220	1280	866	619	386	1280
1940	286	260	260	354	2600	3950	3210	2080	1680	952	503	363	1380
1941	277	249	266	428	1120	3180	2640	1880	1070	760	485	380	1080
1942	338	262	240	327	1670	3400	4070	2590	1390	814	467	393	1340
1943	378	318	293	590	1090	2690	5020	2240	1050	754	463	346	1280
1944	293	274	232	308	1710	3790	2430	2430	1490	871	525	365	1230
1945	296	279	277	266	1050	3100	2910	1880	1150	749	489	354	1070
1946	324	314	298	380	2510	4260	3090	2060	1690	849	508	393	1400
1947	342	319	246	483	2590	4530	3550	1900	1470	1240	668	440	1490
1948	351	314	313	397	3270	5940	3120	2480	1290	677	447	335	1580
1949	271	254	292	331	2200	2390	1890	1670	1090	668	482	290	991
1950	278	290	244	313	767	5480	4420	2160	1290	725	515	430	1410
1951	327	247	216	374	2540	3790	5280	2430	1370	949	542	396	1550
1952	345	317	271	496	2150	4150	3700	2190	1130	791	407	324	1390
1953	318	266	269	291	1260	4540	4200	2270	1360	895	603	412	1400
1954	311	320	304	324	1620	4590	4480	3400	2120	934	638	398	1800
1955	342	284	296	289	718	4520	4110	2110	1250	714	491	400	1320
1956	343	250	266	392	2650	5260	3440	1930	961	607	398	292	1400
1957	310	266	239	297	3200	3550	2480	1650	1050	756	483	393	1230
1958	351	311	244	278	1110	4290	3170	2130	1190	749	451	355	1410
1959	342	334	292	320	1470	5060	4160	2100	1740	959	601	487	1490
1960	319	283	348	402	984	3610	4280	2010	1250	790	542	417	1270
1961	322	316	305	308	2470	6250	2910	2190	1100	909	504	403	1520
1962	325	274	286	470	1350	4040	3650	2420	1250	785	572	360	1320
1963	294	299	294	402	1580	4650	3860	2380	1620	918	581	407	1450
1964	370	304	280	317	900	5460	4560	2090	1330	1210	646	471	1500
1965	424	431	313	384	1210	5850	4740	2940	1380	1090	717	434	1630
1966	375	323	331	345	2690	5010	4970	2580	1470	1020	583	409	1690
1967	341	309	310	314	1210	7130	4900	2620	1630	859	482	332	1720
1968	317	291	308	293	1220	4480	3880	2080	1340	837	508	369	1330
1969	324	290	277	460	2460	4720	3240	2090	1230	802	502	333	1400
1970	284	308	270	255	954	3880	2630	1730	879	540	327	145	1040
MEAN	314	286	269	374	1860	4520	3900	2390	1410	848	509	366	1420

BOW RIVER AT BAMFF - STATION NO. 05B001

ANNUAL EXTREMES OF DISCHARGE IN CFS AND ANNUAL TOTAL DISCHARGE IN AC-FT

YEAR	MAXIMUM INSTANTANEOUS DISCHARGE	MAXIMUM DAILY DISCHARGE	MINIMUM DAILY DISCHARGE	YEAR	TOTAL DISCHARGE
1909	---	---	---	1909	---
1910	---	---	---	1910	---
1911	---	9310 CFS ON JUN 14	203 CFS ON FEB 27	1911	1140000 AC-FT
1912	---	6180 CFS ON AUG 25	205 CFS ON MAR 14	1912	1030000 AC-FT
1913	---	8200 CFS ON JUN 11	216 CFS ON MAR 18	1913	1140000 AC-FT
1914	---	7570 CFS ON JUN 18	253 CFS ON NOV 17	1914	1170000 AC-FT
1915	---	8380 CFS ON JUN 27	245 CFS ON JAN 27	1915	1070000 AC-FT
1916	---	10900 CFS ON JUN 20	246 CFS ON MAR 2	1916	1140000 AC-FT
1917	---	6160 CFS ON JUN 17	214 CFS ON FEB 23	1917	992000 AC-FT
1918	---	1,200 CFS ON JUN 15	213 CFS ON FEB 20	1918	1050000 AC-FT
1919	---	6550 CFS ON JUN 22	161 CFS ON FEB 28	1919	917000 AC-FT
1920	---	8750 CFS ON JUL 3	201 CFS ON APR 3	1920	1060000 AC-FT
1921	---	5030 CFS ON JUN 9	225 CFS ON MAR 11	1921	965000 AC-FT
1922	---	7390 CFS ON JUN 5	232 CFS ON MAR 27	1922	1030000 AC-FT
1923	14100 CFS AT 1200 MST ON JUN 14	13300 CFS ON JUN 14	227 CFS ON DEC 20	1923	1070000 AC-FT
1924	6130 CFS AT 0900 MST ON JUL 5	5890 CFS ON JUL 5	221 CFS ON APR 20	1924	949000 AC-FT
1925	---	7500 CFS ON MAY 23	192 CFS ON DEC 31	1925	1190000 AC-FT
1926	---	4580 CFS ON JUL 7	195 CFS ON APR 5	1926	874000 AC-FT
1927	8060 CFS AT 0855 MST ON JUN 27	7800 CFS ON JUN 27	229 CFS ON FEB 17	1927	1200000 AC-FT
1928	---	10200 CFS ON MAY 28	215 CFS ON DEC 29	1928	1310000 AC-FT
1929	8240 CFS AT 2300 MST ON JUN 2	7590 CFS ON JUN 2	173 CFS ON APR 8	1929	842000 AC-FT
1930	9780 CFS AT 1050 MST ON JUN 8	9280 CFS ON JUN 8	212 CFS ON DEC 29	1930	1130000 AC-FT
1931	---	6610 CFS ON JUN 18	166 CFS ON MAR 26	1931	915000 AC-FT
1932	9980 CFS AT 0800 MST ON JUN 3	9850 CFS ON JUN 3	128 CFS ON JAN 5	1932	1170000 AC-FT
1933	11600 CFS AT 2040 MST ON JUN 17	11000 CFS ON JUN 17	186 CFS ON DEC 26	1933	1140000 AC-FT
1934	---	9490 CFS ON MAY 31	184 CFS ON FEB 26	1934	1100000 AC-FT
1935	---	6940 CFS ON JUN 16	210 CFS ON DEC 19	1935	1090000 AC-FT
1936	---	7720 CFS ON JUN 1	199 CFS ON FEB 16	1936	849000 AC-FT
1937	---	5210 CFS ON JUN 17	182 CFS ON FEB 14	1937	818000 AC-FT
1938	---	7770 CFS ON JUN 23	234 CFS ON FEB 15	1938	1030000 AC-FT
1939	---	6270 CFS ON MAY 29	194 CFS ON FEB 10	1939	925000 AC-FT
1940	---	7220 CFS ON MAY 26	227 CFS ON MAR 12	1940	1000000 AC-FT
1941	---	4450 CFS ON JUN 25	217 CFS ON NOV 23	1941	783000 AC-FT
1942	---	5850 CFS ON JUL 5	225 CFS ON FEB 17	1942	970000 AC-FT
1943	---	7380 CFS ON JUL 10	178 CFS ON FEB 28	1943	924000 AC-FT
1944	---	5590 CFS ON JUN 12	196 CFS ON MAR 13	1944	892000 AC-FT
1945	---	4450 CFS ON JUN 22	247 CFS ON APR 11	1945	775000 AC-FT
1946	7820 CFS AT 1145 MST ON MAY 29	7210 CFS ON MAY 29	272 CFS ON MAR 14	1946	1010000 AC-FT
1947	---	5880 CFS ON JUN 11	258 CFS ON MAR 4	1947	1080000 AC-FT
1948	---	10300 CFS ON JUN 9	297 CFS ON JAN 27	1948	1150000 AC-FT
1949	---	4290 CFS ON JUN 7	215 CFS ON DEC 11	1949	718000 AC-FT
1950	---	10100 CFS ON JUN 21	178 CFS ON MAR 31	1950	1020000 AC-FT
1951	---	8570 CFS ON JUN 16	150 CFS ON MAR 5	1951	1120000 AC-FT
1952	---	5460 CFS ON JUN 30	214 CFS ON APR 1	1952	1010000 AC-FT
1953	9920 CFS AT 2200 MST ON JUN 13	9180 CFS ON JUN 14	212 CFS ON FEB 9	1953	1010000 AC-FT
1954	10200 CFS AT 1315 MST ON JUL 8	10100 CFS ON JUL 8	227 CFS ON MAR 28	1954	1300000 AC-FT
1955	8860 CFS AT 1200 MST ON JUN 14	8680 CFS ON JUN 24	238 CFS ON FEB 11	1955	954000 AC-FT
1956	9680 CFS AT 2300 MST ON JUN 5	9060 CFS ON JUN 5	215 CFS ON DEC 6	1956	1020000 AC-FT
1957	5530 CFS AT 1300 MST ON MAY 20	5360 CFS ON MAY 20	207 CFS ON MAR 5	1957	892000 AC-FT
1958	6980 CFS AT 0900 MST ON MAY 26	6730 CFS ON MAY 26	217 CFS ON MAR 1	1958	1020000 AC-FT
1959	7620 CFS AT 1200 MST ON JUN 22	7480 CFS ON JUN 22	236 CFS ON JAN 3	1959	1080000 AC-FT
1960	6600 CFS AT 0600 MST ON JUL 1	6440 CFS ON JUL 1	256 CFS ON FEB 27	1960	925000 AC-FT
1961	9560 CFS AT 1700 MST ON JUN 6	9400 CFS ON JUN 7	268 CFS ON JAN 19	1961	1100000 AC-FT
1962	6900 CFS AT 2100 MST ON JUN 26	6490 CFS ON JUN 26	192 CFS ON FEB 5	1962	957000 AC-FT
1963	6570 CFS AT 0300 MST ON JUL 9	6460 CFS ON JUN 19	227 CFS ON FEB 2	1963	1050000 AC-FT
1964	---	8670 CFS ON JUN 14	258 CFS ON MAR 23	1964	1090000 AC-FT
1965	10500 CFS AT 1400 MST ON JUN 19	10200 CFS ON JUN 19	278 CFS ON MAR 18	1965	1180000 AC-FT
1966	8310 CFS AT 1300 MST ON JUN 1	7960 CFS ON JUN 1	280 CFS ON MAR 3	1966	1220000 AC-FT
1967	---	9720 CFS ON JUN 22	266 CFS ON MAR 11	1967	1250000 AC-FT
1968	6960 CFS AT 1500 MST ON JUN 27	6750 CFS ON JUN 27	266 CFS ON APR 22	1968	965000 AC-FT
1969	7380 CFS AT 0840 MST ON JUN 6	7180 CFS ON JUN 6	265 CFS ON JAN 31	1969	1010000 AC-FT
1970	5760 CFS AT 0809 MST ON JUN 5	5490 CFS ON JUN 5	184 CFS ON NOV 23	1970	751000 AC-FT
EXTREMES OF DISCHARGE FOR THE PERIOD OF RECORD				MEAN	1030000 AC-FT
MAX. INST. DISCHARGE IS 14100 CFS ON JUN 14 1923 AT 1200 MST					
MAX. DAILY DISCHARGE IS 13300 CFS ON JUN 14 1923					
MIN. DAILY DISCHARGE IS 128 CFS ON JAN 5 1932					

APPENDIX 9

SAMPLE SHEETS FROM "SEDIMENT DATA
/ FOR CANADIAN RIVERS"

ENVIRONMENT CANADA

PEACE RIVER AT PEACE RIVER - STATION No. 071A001

Location: Lat. 56° 14' 41", long. 117° 18' 46", Alberta, in NW 1/4 sec. 31, tp. 83, rge. 21, W. 5th mer., combined traffic and railway bridge.

Drainage Area: 72,000 square miles.

Gauge: Recording.

Period of Record: Suspended sediment load, periods of varying length, 1966 to 1969.

Extremes Recorded: Maximum daily suspended sediment load, 4,190,000 tons/day on June 14, 1968.

Minimum daily suspended sediment load, 81.0 tons/day on February 25, and 26, 1968.

Monthly Mean Suspended Sediment Load in Tons per Day

Year	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Mean
1966						205,000	103,000	108,000	41,100	5,220			
1967					859,000*	620,000	58,100	7,060	2,360	12,600	767	680	152,000
1968	848	1,340	7,240		141,000	475,600	37,600	11,100	3,920	2,840			75,200
1969	468	695	1,040		288,000	54,700	27,400	18,700	48,400	8,000	2,550	1,130	38,000

* Partial month record.

Suspended Sediment for 1969

Day	January				February				March			
	Water Temp. (°C)	Daily Discharge (cfs)	Suspended Sediment		Water Temp. (°C)	Daily Discharge (cfs)	Suspended Sediment		Water Temp. (°C)	Daily Discharge (cfs)	Suspended Sediment	
			Mean Concentration (mg/litre)	Tons per day			Mean Concentration (mg/litre)	Tons per day			Mean Concentration (mg/litre)	Tons per day
1		8,550B	6	139		15,400B	13	470		13,100B	13	460
2		8,900B	9	216		15,900B	17	638		10,900B	15	383
3		11,200B	12	365		15,100B	21	856		10,100B	12	327
4		12,200B	11	362		15,200B	24S	985		15,000B	12	486
5		11,200B	10	302		14,800B	25	999	0.5	14,200B	12S	460
6		13,800B	15	484		14,500B	26	1,020		16,000B	12	518
7	0.5	15,500B	15S	628		14,700B	25	992		16,500B	12	535
8		16,000B	16	691		14,200B	24	920		16,400B	12	531
9		16,200B	16	700		13,700B	22	814		16,000B	12	518
10		16,100B	15	652		13,700B	21	777		16,100B	13	565
11		16,300B	14	616		13,600B	20	734		16,400B	13	576
12		17,400B	15	611		12,200B	21	692		14,800B	13	519
13		16,200B	15	569		12,100B	21	686		17,500B	13	614
14		15,300B	14	578		15,400B	22	796		16,300B	13	572
15		14,500B	13	509		14,900B	22	885		16,600B	12	538
16		15,400B	15	541		14,900B	21	845		18,700B	13	656
17		15,900B	15	558		15,400B	19	790		19,500B	16	842
18		16,000B	15	562		15,100B	16	665		19,100B	22	1,130
19		15,900B	13	558	0.5	14,600B	15S	591		17,400B	29	1,360
20		16,000B	12	518		13,800B	14	522	0.5	16,700B	35S	1,580
21		15,600B	12	505		14,700B	14	556		18,600B	36	1,810
22		14,300B	12	463		15,000B	14	567		17,900B	35	1,690
23		13,800B	12	447		13,900B	14	525		18,300B	34	1,680
24		14,000B	12	454		13,000B	14	491		18,400B	34	1,690
25		14,300B	12	465		12,400B	13	435		18,200B	33	1,620
26		14,400B	11	428		11,700B	13	411		17,200B	33	1,530
27		14,400B	11	428		11,300B	15	397		17,500B	34	1,610
28		14,500B	10	392		11,800B	15	414		18,600B	37	1,860
29		13,800B	7	261		-	-	-		18,100B	39	1,910
30		11,500B	7	217		-	-	-		16,800B	41	1,860
31		11,600B	9	282		-	-	-		15,700B	45	1,910
Total		440,750	369	14,497		387,300	51	10,473		512,600	705	32,340
Mean		14,200	12	468		13,800	18	695		16,500	23	1,040

B - Ice conditions.

S - Sample(s) collected this day.

PEACE RIVER AT PEACE RIVER (Cont.)

Suspended Sediment for 1969

April												May				June			
Day	Water Temp. (°C)	Daily Discharge (cfs)	Suspended Sediment		Water Temp. (°C)	Daily Discharge (cfs)	Suspended Sediment		Water Temp. (°C)	Daily Discharge (cfs)	Suspended Sediment								
			Mean Con- centration (mg/litre)	Tons per day			Mean Con- centration (mg/litre)	Tons per day			Mean Con- centration (mg/litre)	Tons per day							
1						124,000	4,600S	1,540,000	13.0	66,300	122S	21,800							
2						128,000	5,220	1,800,000	10.0	65,300	104S	18,300							
3					9.0	119,000	3,430S	1,100,000	12.0	69,200	221S	41,300							
4					9.0	117,000	2,280S	720,000	14.5	88,700	542S	130,000							
5					8.5	122,000	2,540S	837,000	14.5	97,200	790S	203,000							
6																			
7					8.5	115,000	1,780S	553,000	15.0	102,000	976S	269,000							
8					9.5	98,100	1,050S	278,000		96,400	821	214,000							
9					10.5	83,100	783S	176,000		84,500	570	130,000							
10					11.0	72,900	699S	138,000		74,500	345	69,400							
11					11.5	67,100	492S	89,100		67,100	184	33,300							
12					11.0	67,500	450S	78,400	15.5	68,200	257S	47,300							
13					12.0	72,000	393S	76,400		71,200	371	71,300							
14					10.0	82,700	563S	126,000		68,300	283	52,200							
15					9.5	85,900	684S	155,000		64,300	210	36,500							
16					10.5	80,000	597S	130,000	15.5	58,300	171S	26,900							
17					11.5	77,600	395S	82,800		52,200	146	20,600							
18						66,800	269	48,500		50,100	127	17,200							
19					10.5	60,600	246S	39,300	16.5	48,000	112S	14,500							
20					9.5	55,000	203S	30,300		45,900	108	15,400							
21					10.0	57,200	247S	34,300		47,600	107	15,800							
22						55,000	247	36,700		49,300	106	14,100							
23					15.0	55,700	230S	33,300		45,900	106	13,100							
24					15.5	55,300	117S	17,500		41,900	105	11,900							
25						58,500	121	19,100	15.0	38,900	105S	11,000							
26					15.5	68,700	326S	60,500		39,300	108	11,500							
27					9.0	85,500	635S	143,000		44,200	110	13,100							
28					9.5	89,800	954S	231,000		46,800	113	14,300							
29					10.0	92,200	824S	205,000		50,400	127	17,300							
30					11.0	80,300	405S	87,400		58,500	171	27,000							
31					12.0	70,700	241S	46,000	10.5	69,500	321S	60,200							
						67,300	152S	27,600											
Total						2,521,400	31,140	8,386,000		1,870,000	7,939	1,641,300							
Mean						81,300	1,000	268,000		60,300	265	54,700							

July				August				September				
1	10.5	70,000	124	100,000		57,400	326	52,000	14.5	40,800	78S	8,590
2		67,000	187	88,100		55,300	292	27,800		37,200	67	6,730
3		60,300	400	65,100		55,000	295	28,400		35,900	51	4,940
4		52,600	354	50,300		55,300	279	26,600		37,100	46	4,610
5		51,700	327	45,600		52,500	252	20,200		44,000	92	10,900
6		49,700	341	41,600		51,100	217	18,400		58,300	165	26,000
7		47,300	304	38,400	18.0	45,800	421S	49,800	12.0	67,000	195S	35,300
8		47,000	289	36,700		50,000	354	47,800		73,400	343	68,000
9		48,200	269	35,000		44,700	238	28,700		70,200	310	58,800
10	14.5	48,600	246S	52,300		42,800	178	20,600		64,600	240	41,900
11		44,600	225	27,100		41,400	129	14,400		59,200	183	29,300
12		42,400	213	24,400	16.5	40,100	92S	9,960		53,800	154	22,400
13		41,500	199	22,300		40,600	86	9,430		52,900	166	23,700
14		40,100	185	20,000		42,400	99	11,300	10.0	47,600	178S	22,900
15		36,300	171	16,900		42,100	108	12,300		59,800	798	129,000
16		34,200	158	14,600		41,600	112	12,600	5.5	64,500	1,030S	179,000
17		35,100	144	13,600		41,300	119	13,200		64,200	778	135,000
18		33,100	131	11,700		41,200	124	13,800		62,400	430	72,400
19		32,600	118	10,400		39,700	121S	15,000		62,900	261	44,300
20		31,800	104	8,930		38,100	125	13,000		65,200	229	39,100
21		31,000	99	8,290		37,900	132	13,500		65,800	239	42,500
22		30,900	97	8,090		40,100	139	15,000	6.5	69,200	244S	45,600
23		30,800	95	7,900		40,300	144	15,600		69,300	240	44,900
24		31,300	93	7,800		40,500	150	16,800		69,000	238	44,300
25	18.0	30,600	91S	7,520		40,200	145	15,700		68,500	259	47,900
26		29,500	97	7,250		38,500	136	14,100		74,800	327	66,000
27		27,400	160	13,800		38,000	127	13,300	7.0	78,000	339S	71,400
28		33,700	169	16,400		40,500	117	12,700		77,400	293	61,200
29		31,000	144	12,100		41,200	111	12,500		69,700	211	39,700
30	19.0	33,000	215S	19,200		41,000	114	13,000		65,600	152	26,900
31		38,900	355	37,300		42,400	116	15,300				
Total		1,267,500	6,770	848,220		1,140,300	5,370	579,490		1,826,300	8,336	1,453,270
Mean		40,800	218	27,400		40,000	174	18,700		60,900	278	48,400

E - Estimated.

S - Sample(s) collected this day.

PEACE RIVER AT PEACE RIVER (Cont.)

Suspended Sediment for 1969

Day	Water Temp. (°C)	October			November				December			
		Daily Discharge (cfs)	Suspended Sediment		Water Temp. (°C)	Daily Discharge (cfs)	Suspended Sediment		Water Temp. (°C)	Daily Discharge (cfs)	Suspended Sediment	
			Mean Concentration (mg/litre)	Tons per day			Mean Concentration (mg/litre)	Tons per day			Mean Concentration (mg/litre)	Tons per day
1		64,200	123	21,300		37,400	38	3,840		37,200B	17	1,710
2		62,100	104	17,400		42,000	41	4,650		36,700B	16	1,590
3		58,000	95	14,900		42,100	41	4,660		37,500B	15	1,520
4	6.5	57,400	87S	13,500		40,800	43	4,740		39,300B	15	1,590
5		55,500	81	12,100		43,400	48	5,620		39,000B	14	1,470
6		50,700	76	10,400		46,600	50	6,290		38,600B	14	1,460
7		45,900	71	8,800		45,000	43	5,220		36,800B	13	1,290
8		46,400	86	10,800		41,100	36	3,990		31,200B	12	1,010
9		49,100	108	14,300		40,800	30	3,300		32,100B	12	1,040
10		47,300	105	13,400		40,100	24	2,600	0.5	33,500B	11S	995
11		45,800	99	12,200		40,100	20	2,170		32,600B	11	968
12	7.0	45,100	86S	10,500		41,600	16	1,800		32,400B	11	962
13		43,800	65	7,690		38,400	15	1,560		29,900B	11	888
14		39,900	47	5,060		37,700	13	1,320		28,200B	11	838
15		38,300	39	4,030		37,500	13	1,320		26,000B	11	772
16		39,000	63	6,630		34,500	13	1,210		27,100B	11	805
17		40,800	56	6,170		34,700B	13	1,220		28,100B	11	835
18	4.5	40,100	30S	3,250		33,500B	13	1,180		27,300B	11	811
19		39,700	23	2,470		33,200B	13	1,170		26,500B	12	859
20		38,000	31	3,180		32,900B	13	1,150		25,700B	11	763
21		36,100	42	4,090		32,900B	13	1,150		24,900B	11	740
22		36,900	48	4,780		32,100B	13	1,130		24,100B	11	716
23		38,800	57	5,970		33,500B	13	1,180		23,300B	10	629
24		38,500	67	6,960		33,900B	13	1,190		25,400B	11	754
25	3.5	37,900	78S	7,980		34,500B	15	1,400		27,700B	17	1,270
26		38,500	69	7,170		38,500B	20	2,080		35,500B	21	2,010
27		37,200	41	4,120		40,300B	24	2,610		31,800B	13	1,120
28		32,100	22	1,910		43,200B	22	2,570		25,800B	10	697
29		32,300	14	1,220		38,800B	20	2,100		28,100B	13	986
30		38,100	22	2,260		37,700B	19	1,930		34,900B	17	1,600
31	2.0	37,700	35S	5,560		-	-	-		36,000B	23	2,240
Total		1,351,200	1,970	248,100		1,148,800	708	76,350		963,200	407	34,938
Mean		43,600	64	8,000		38,300	24	2,550		31,100	13	1,130

The Period: Total discharge, 13,529,650 cfs-days
Total suspended load, 13,887,578 tons
Mean concentration, 380 mg/l

B - Ice conditions.
S - Sample(s) collected this day.

Particle-size Analyses of Suspended Sediment

(Methods of analysis: B, bottom withdrawal tube; P, pipette; S, sieve; N, in native water; W, in distilled water; C, chemically dispersed; M, mechanically dispersed; V, visual accumulation tube)

Date of Collection	Time	Discharge Measurement (cfs)	Water Temp. (°C)	Concentration of sample(s) (mg/litre)	Suspended Sediment										Methods of analysis
					Per cent finer than indicated size, in millimetres										
					0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.500	1.000	
1969					Depth Integrating										
May 1	1010	124,000H		4,640K	26	35	47	61	75	88	94	96	98	99	BNW
May 3	1730	119,000H		2,540K	29	39	54	69	80	87	92	97	98	99	"
May 5	1810	122,000H		2,610K	13	20	29	39	47	54	59	72	95	99	"
May 7	1730	98,100H		979K	32	43	58	72	82	89	93	98	99	100	"
May 9	1720	72,900H		727K	20	28	39	50	58	65	75	97	100		"
May 10	1145	67,100H		465K	32	43	57	73	87	92	95	99	100		"
May 12	1830	72,000H		379K	27	32	46	60	71	84	93	98	100		"
May 13	1730	82,700H		653K	17	25	35	48	62	75	83	91	95	97	"
May 14	1815	83,900H		629K	18	28	40	55	70	83	91	95	98	99	"
May 16	1820	77,600H		312K	26	35	46	58	69	80	89	96	99	100	"
May 25	1035	68,700H		308K	15	23	34	45	61	81	95	99	100		"
May 29	1730	80,300H		353K	23	30	43	60	72	83	94	98	100		"
June 4	1730	88,700H		632K	11	15	24	34	46	59	73	95	100		"
June 6	1730	102,000H		1,010K	14	19	27	40	54	73	89	96	99	100	"
June 11	1930	68,200H		345K	10	15	25	39	55	68	79	92	97	99	"
June 30	1730	69,500H		376K	27	36	48	63	73	81	91	99	100		"
July 10	1730	48,600H		243K	27	35	47	64	83	91	94	98	99	100	"
August 7	1815	43,800H		529K	19	24	38	55	70	83	89	93	97	99	"
Sept. 22	1730	69,200H		246K	18	23	32	40	49	60	72	84	96	99	"
Sept. 27	1000	78,000H		343K	31	35	48	62	70	77	83	91	99	100	"

H - Daily mean discharge.

K - Sample(s) collected in single vertical.

APPENDIX 10

FORESTRY INVENTORY STATEMENTS AVAILABLE

SAMPLE FOREST TYPE SUMMARY

TRANSECT CLUSTER SUMMARY

ALBERTA LANDS AND FORESTS

FOREST INVENTORY STATEMENTS CURRENTLY AVAILABLE

Sept. 15/74

Unit	Inventory	Photography	Unit	Inventory	Photography
<u>Athabasca (Old Units)</u>			<u>Footner Lake</u>		
A-1	1	1951	F-1	1	1953
2	1	1951	2	11	1963
3	1	1951	3	1	1953
4	1	1951-53	4	11	1964
5	1 (111)	1950 (1972)	5	11	1964
6	1	1949-50	6	11	1964
7	1 (111)	1950 (1972)	7	1	1949-54
8	1	1953-54	8	11	1964
9	1	1949-53	9	1	1949-54
10	1	1949-54	10	1	1949-50
11	1	1949-50	12	11	1962
12	1	1949-50	13	11	1964
13	1	1949-50	14	1	1949-54
<u>Bow-Crow</u>			15	11	1962
B-1	11	1957-58	16	1	1949-50
2	11	1957-58	17	1	1949-50
3	11	1957-58	18	1	1949-54
4	11	1957-58	19	1	1949-54
5	11	1957-58	20	1	1949-53
6	11	1957-58	F-0-1	1	1949-54
C-1	11	1957-58	<u>Grande Prairie</u>		
2	11	1957-58	G-1	11	1961
3	11	1957-58	2	1	1952
<u>Clearwater-Rocky</u>			3	11	1957-58
R-1	11	1957-58	4	11	1957
2	11	1957-58	5	11	1957-58
3	11	1957-58	6	11	1957-58
4	11	1957-58	7	11	1957-58
5	11	1957-58	8	1	1950-52
6	11	1957-58	G-0-1	1	1950-52
7	11	1957-58	2	1	1950-52
8	11	1957-58	3	1	1950-52
9	11	1957-58	4	1	1950-52
R-0-1	1	1950	<u>Lac La Biche</u>		
Siff.	11	1957-58	L-1	1	1951-52
W. Goat	11	1957-58	2	11	1967
<u>Edson</u>			3	11	1961
E-1	1	1950-51	4	11	1961
2	11	1960-63	5	1	1951
3	1	1950-51	6	1	1951
4	1	1950-51	7	1	1950-51
5	1	1951	8	1	1950-52
6	1	1950-51	8	11	1967
7	1	1950-51	L-0-1	1	1952
8	1	1950-51	M-7	1	1952
9	1	1951	M-9,10	1	1952
10	1	1950-51	<u>Peace River</u>		
11	11	1957-58	P-1	11	1961
12	1	1950-51	2	11	1961
E-0-1	11	1957-63	3	1	1952
WWPP	1	1951	4	1	1952
			5	1	1953
			6	11 (111)	1962 (1970)
			7	1	1949-53
			8	1	1949-53
			9	1	1949-53
			10	1	1953
			P-0-1	1	1952
			P-0-2	1	1952
			P-0-3	1	1952-53
			M-1	1	1953

<u>Unit</u>	<u>Inventory</u>	<u>Photography</u>
	<u>Slave Lake</u>	
S-1	I	1950
1	II	1957-58
2	I	1950
2	II	1958
3	II	1962
4	II	1963
5	II	1957
6	I	1950
6	II	1958
7	I	1945-52
8	II	1963
9	II	1965
10	I	1951-52
11	II	1965
12	II	1965
13	I	1945-54
14	I	1949-53
14	II	1963
15	II	1963
S-0-1	I	1945-52
S-0-2	I	1950-52
M-3	I (III)	1951-52 (1973)
M-4	I (III)	1952 (1973)
	<u>Whitecourt</u>	
W-1	I	1950
2	I	1950
3	I	1950
4	I	1950
5	I	1950
5	II	1961
6	II	1957-61
W-0-1	II	1950-61
W-0-2	I	1950-51
W-0-3	I	1950

Forest Inventory Description

Broad Forest Inventory (I) - dates of aerial photography: 1949-54; minimum stand area in mapping - 160 acres; stand density, height, species composition are identified in the forest types on the map.

Detailed Forest Inventory (II) - date of aerial photography: 1957-67; minimum stand area in mapping - 40 acres; stand density, height, species composition, site, maturity or date of origin are identified in the forest types on the map.

Very Detailed Forest Inventory (III) - date of aerial photography: 1972; minimum stand area in mapping - 10 acres; stand density, height, species composition, site, date of origin and commercialism are identified on the map.

Note:

Bracketed Inventory symbol and Photography date indicate that preliminary Very Detailed Forest Inventory (III) Computer statements are available. A decision will be made in the near future as to what forest inventory computer statements will be presented from this type of inventory.

DEPARTMENT OF LANDS AND FORESTS - PROVINCE OF ALBERTA

Updated - Jan 01, 1070

Forest Type Listing

Date	May 01/72	Forest	Lac La Biche	Acres	W Spruce	B Spruce	Mcubic ft 4 inch up diameters	Balsam	Pine Tot	Conif	Aspen	W Spruce	Balsam	Pine T	Conif
Zn No	Subtype	Age	Cond												
3	A2SBP	2P		10		4			3	7					
3	B2SBPA	2P		1095	11	548		44	384	987	558				
3	A2PA	1Y		200	12				78	90	52				
3	A1A	1B		415											
3	A3ASW	1P		165	84			4	2	90	147				
3	A1AP	1B		15											
3	A1ASB	1B		110											
3	Brushland			6045											
3	Water			170											
3	Open Mskg			2070											
3	Treed Mskg			1405											
Township Totals				11700	107	552	48	467	1174	757					

DEPARTMENT OF LANDS AND FORESTS

LAC LA BICHE FOREST

FOREST SUMMARY BY MATURITY CLASSES IN MCUFT

Unit	Maturity	Acres	W Spruce	B Spruce	Balsam	Pine	Total Conif.	Aspen
	Overmature	2331	2332	60	226	3058	5676	1966
	Mature	92200	104167	3430	6845	37134	151576	141403
	Immature	840952	645463	130502	33511	196055	1005531	1195404
	Young	1098733	146432	123655	12004	236503	518594	851585
	Regen	300758	0	0	0	0	0	0
	Site 4	4422	3895	2575	7608	15912	14117	1617
	Zone 6	0						
	Total Forested	2339396						
	Potential Prod.	616706						
	Brushland	1478351						
	Water	579792						
	Alienated	730173						
	Cleared	17252						
	Open Muskeg	666324						
	Treed Muskeg	2363837						
	Grass Land	2289						
	Above Tree Line	12						
	Stunted Due Elv	0						
	Rock Barren	0						
	Sand	25						
	Cut Banks	0						
	Indian Reserves	84791						
	Federal Parks	0						
	Protect. Forest	0						

Provincial Park	0								
Total Non Prod	5922846								
Totals for Forest	8878948	902289	260222	60194	488662	1695494	2191975		

DEPARTMENT OF LANDS AND FORESTS - PROVINCE OF ALBERTA

Updated - Jan 01, 1070

Unit Type Summary

Date May 01/72	Forest	Lac La Biche	Management Unit L 1					Aspen W Spruce	Balams	Pine Tot Conif	Aspen
			Acres	Age Cond	M cubic ft 4 inch up diameters						
					W Spruce	B Spruce	Pine Tot Conif				
Sub Type											
3A1SW	R1	305									
3B1SW	R1	590									
3A2SW	Y1	440									
3B2SW	Y1	1279	207		19	10	236	17			
3C2SW	Y1	560	1329	14	102	66	1511	115			
3A3SW	P1	185	869	6	68	44	987	79			
3B3SW	P1	785	206		14	8	228	30			
3C3SW	P1	250	1525		108	48	1681	221			
3C2SWP	Y1	20	715	3	53	23	794	103			
3A3SWP	P1	30	20		3	15	38	2			
3B3SWP	P1	119	19		6	15	40	3			
3A2SWA	Y1	1000	137	2	38	108	285	19			
3B2SWA	Y1	400	359		22	11	392	240			
3C2SWA	Y1	990	304		16	8	328	200			
3D2SWA	Y1	160	1109	10	49	40	1208	733			
3A3SWA	P1	925	255	2	12	8	277	167			
3B3SWA	F1	2265	768		28	18	814	491			
3C3SWA	P1	6140	3262		115	94	3471	2107			
3C3SWA	P1	90	13079	62	430	308	13879	8413			
3B4SWA	M1	1620	277	1	10	7	295	178			
3C4SWA	M1	1000	3224		113	16	3353	2009			
3C2SWPA	Y1	75	3130		110	30	3270	1940			
3A3SWPA	P1	745	56	1	3	37	97	55			
3B3SWPA	P1	430	395		14	291	700	365			
3C3SWPA	P1	330	395	4	13	284	696	370			
3A1SB	Y2	3129	446	3	17	324	790	413			
3B1SB	Y2	2053									
3C1SB	Y2	659									
3B2SB	P2	90									
3C2SB	P2	145									
3A1SBP	Y2	1815									
3B1SBP	Y2	1438									
			3	104	5	7	119	3			
			6	244	10	19	279	7			

DEPARTMENT OF LANDS AND FORESTS - PROVINCE OF ALBERTA

Updated - Jan 01, 1070

Unit Type Summary

Date May 01/72	Sub Type	Age Cond	Forest Acres	Lac La Biche	Management Unit L 1			Aspen W Spruce	Balsam	Pine Tot Conif	Aspen	Tot Conif
					M cubic ft	4 inch up diameters	Pine Tot Conif					
					Spruce	Balsam						
3C1SBP Y2			1242									
3A2SBP P2			10		4		3	7				
3B2SBP P2			430	8	318	17	224	567			17	
3A1SBA Y2			346									
3A2SBA P2			460	5	175	9	5	194			120	
3A2SBA Y1			35		13	1		14			9	
3B2SBA P2			200	6	170	8	8	192			116	
3B2SBA Y1			330	10	281	13	13	317			192	
3A2SBPA P2			948		238	19	171	428			238	
3B2SBPA P2			1095	11	548	44	384	987			558	
3A1P R1			1735									
3B1P R1			413									
3A2P P2			270	14			175	189			8	
3A2P Y1			9020	451			5864	6315			270	
3B2P Y1			2188	197	21	21	2931	3170			131	
3A3P P1			1571	190		30	1948	2168			159	
3B3P P1			1781	357	18	54	3740	4169			287	
3A2PSW Y1			163	32		4	69	105			5	
3A1PSB R1			2027									
3A1PSB Y2			947									
3B1PSB R1			1279									
3B1PSB Y2			1083									
3C1PSB R1			501									
3A2PSB Y1			1094	10	274		493	777			10	
3D2PSB Y1			1378	14	690	14	1268	1986			28	
3C2PSB P2			185	4	135	2	246	387			6	
3A1PA R1			2349									
3A1PA Y2			154									
3B1PA R1			526									
3A2PA Y1			11069	664			4318	4982			2879	
3B2PA Y1			1996	219			1598	1817			1058	
3C2PA Y1			2891	492			3355	3847			2255	

DEPARTMENT OF LANDS AND FORESTS - PROVINCE OF ALBERTA

Updated - Jan 01, 1070

Forest Type Summary

Date May 01/72	Forest	Lac La Biche	Acres	W Spruce	B Spruce	Mcubic ft 4 inch up diameters	Management Unit L 1	Township 73	Range 8 W4 Meridian	Aspen W Spruce	Balsam	Pine Tot	Conif	Aspen
Sub Type	Age	Cond												
3A2SBP	P2		10			4								
3B2SBPA	P2		1095	11		548	44							
3A2 PA	Y1		200	12			384			558				
3A1A	R1		415				78			52				
3A3ASW	P1		165	84										
3A1AP	R1		15							147				
3A1ASB	R1		110				2							
Township Totals			2010	107		552	48	467	1174	757				
Total Acrea	TWP	Forested	2010	Potential	Non-Prod	9690	Zone-6	Total Acres	11700					

TRANSECT CLUSTER SUMMARY

District Porcupine Allotment Lower Spring Management Unit DC-4

Transect Cluster No. P Le-1 By Survey crew Date 11/8/68

COMPOSITION

Desir-able*	Av. No. Strikes	Av. % of total plant density	Inter-mediate	Av. No. Strikes	Av. % of total plant density	Unde-sirable*	Av. No. Strikes	Av. % of total plant density
Dpc	7	14.00	Carex	25.25	50.50	Ant	3.50	7.00
Fsl	1.75	3.50	Others	.25	.50	Ofr	1.25	2.50
Others	6.25	12.50				Others	5.25	10.50
TOTAL		30.00			51.00			20.00

* List key indicator species only - group others.

SUMMARY OF ALL TRANSECTS IN CLUSTER

VIGOR MEASUREMENT

Transect No.	1	2	3	4	Av.
Bare Ground				2	.50
Rock		1			.25
Litter	51	42	53	51	49.25
Moss					
Plant Density Index	49	57	47	47	50.00
TOTAL	100	100	100	100	100
Forage Density Index	43	49	38	32	40.50
Ground Cover Density	100	100	100	48	49.25

Species	Av. Max. Leaf Length	% of Max.	Av. Max. Clump Diam.	% of Max.
Fsc	Fen	Plenty	Available	
Dpc	9.00	81.8	3.80	63.3

CLASSIFICATION OF CONDITION AND TREND RATING OF CLUSTER

Vegetation

Forage Density Index 9
 Composition 13
 Vigor 9
 TOTAL 31

Soil Stability

Erosion Hazard 15
 Current Erosion 15
 TOTAL 30

Condition Class Good
 Current Trend Up

Condition Class Very Good
 Current Trend Can go little higher

KEY INDICATORS ON PLOT

Species	Live Plants	Dead Plants	Seedlings

APPENDIX 11

METEOROLOGICAL STATIONS AND SAMPLE DATA SHEETS

MINISTRY OF TRANSPORT

MINISTRY OF TRANSPORT

METEOROLOGICAL STATION LOCATIONS

IN ALBERTA

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ELEMENT and STATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC	YEAR	TYPE
ALBERTA														
000 PELICAN MOUNTAIN LU	LATITUDE 55 37 N LONGITUDE 113 34 W ELEVATION 3000 FT ASL													
GREATEST RAINFALL IN 24 HRS					1.82	5.39	2.21	2.50	3.07	0.74				H
NO. OF YEARS OF RECORD					17	17	18	15	17	11				
GREATEST SNOWFALL IN 24 HRS					17.7	1	0.0	2.0	4.0	9.0				H
NO. OF YEARS OF RECORD					15	17	18	15	17	11				
GREATEST PRECIPITATION IN 24 HRS					1.82	5.39	2.21	2.50	3.07	0.90				H
NO. OF YEARS OF RECORD					17	17	18	15	16	11				
NO. OF DAYS WITH MEASURABLE RAIN					8	12	13	12	9	3				H
NO. OF DAYS WITH MEASURABLE SNOW					2	0	0	*	1	3				H
NO. OF DAYS WITH M. PRECIPITATION					9	12	13	12	10	5				H
000 PIMPLE LU	LATITUDE 54 30 N LONGITUDE 115 28 W ELEVATION 3619 FT ASL													
MEAN DAILY TEMPERATURE (DEG F)					46.9	53.5	58.3	55.6	47.2					H
MEAN DAILY MAXIMUM TEMPERATURE					57.1	63.1	68.0	64.9	56.2					H
MEAN DAILY MINIMUM TEMPERATURE					36.6	43.8	48.6	46.2	38.2					H
EXTREME MAXIMUM TEMPERATURE					80	85	84	87	82					H
NO. OF YEARS OF RECORD					8	8	8	8	6					
EXTREME MINIMUM TEMPERATURE					22	30	37	32	15					H
NO. OF YEARS OF RECORD					7	8	8	8	8					
NO. OF DAYS WITH FROST					9	1	0	*	8					H
MEAN RAINFALL (INCHES)					2.09	3.46	4.09	3.03	1.05					H
MEAN SNOWFALL					3.5	0.6	0.0	0.0	2.1					H
MEAN TOTAL PRECIPITATION					2.44	3.52	4.09	3.03	1.26					H
GREATEST RAINFALL IN 24 HRS				0.43	1.28	3.17	1.83	2.42	1.36	0.43				H
NO. OF YEARS OF RECORD				5	14	13	14	14	11	8				
GREATEST SNOWFALL IN 24 HRS				5.2	9.0	2.2	0.0	0.0	8.0	8.6				H
NO. OF YEARS OF RECORD				5	13	13	14	14	11	8				
GREATEST PRECIPITATION IN 24 HRS				0.52	1.24	3.17	1.83	2.42	1.36	0.86				H
NO. OF YEARS OF RECORD				5	14	13	14	14	12	8				
NO. OF DAYS WITH MEASURABLE RAIN					9	17	14	13	8					H
NO. OF DAYS WITH MEASURABLE SNOW					2	*	0	0	1					H
NO. OF DAYS WITH M. PRECIPITATION					11	12	14	13	10					H
000 PINCHER CREEK	LATITUDE 49 30 N LONGITUDE 113 57 W ELEVATION 3790 FT ASL													
MEAN DAILY TEMPERATURE (DEG F)	16.1	22.6	26.6	38.1	48.0	54.7	61.9	59.8	51.9	43.1	30.3	22.4	39.6	H
MEAN DAILY MAXIMUM TEMPERATURE	26.9	33.8	38.1	49.8	60.7	67.2	78.3	75.1	66.1	55.7	41.0	32.3	52.1	H
MEAN DAILY MINIMUM TEMPERATURE	5.2	11.3	15.1	26.3	35.2	42.1	45.4	44.4	37.6	30.5	19.5	12.5	27.1	H
EXTREME MAXIMUM TEMPERATURE	56	62	68	78	84	91	92	96	93	80	73	55	96	H
NO. OF YEARS OF RECORD	10	10	10	10	10	10	10	10	11	11	11	11		
EXTREME MINIMUM TEMPERATURE	-43	-24	-27	-3	17	30	35	31	13	-3	-25	-42	-43	H
NO. OF YEARS OF RECORD	10	10	10	10	10	10	10	10	11	11	11	11		
NO. OF DAYS WITH FROST	28	25	27	21	8	1	0	*	6	14	24	28	102	H
MEAN RAINFALL (INCHES)	0.02	0.02	0.06	0.35	2.20	3.85	1.35	1.73	1.65	0.50	0.11	0.01	11.85	H
MEAN SNOWFALL	17.3	14.6	13.9	23.2	6.3	0.8	0.0	0.0	6.4	9.4	13.2	14.2	119.3	H
MEAN TOTAL PRECIPITATION	1.30	1.24	1.07	2.07	2.77	3.93	1.35	1.73	2.23	1.38	1.12	1.10	21.29	H
GREATEST RAINFALL IN 24 HRS	0.04	0.06	0.44	0.57	2.06	3.80	0.87	1.83	1.17	0.54	0.34	0.03	3.80	H
NO. OF YEARS OF RECORD	9	10	10	10	10	10	10	10	11	11	11	11		
GREATEST SNOWFALL IN 24 HRS	10.3	8.7	7.7	21.4	9.4	5.1	0.0	0.0	17.1	12.0	10.3	9.9	21.4	H
NO. OF YEARS OF RECORD	10	10	10	10	10	10	10	10	11	11	11	11		
GREATEST PRECIPITATION IN 24 HRS	0.72	0.80	0.45	1.15	2.06	3.80	0.87	1.83	2.10	1.20	0.68	0.89	3.80	H
NO. OF YEARS OF RECORD	10	10	10	10	10	10	10	10	11	11	11	11		
NO. OF DAYS WITH MEASURABLE RAIN	1	1	2	4	9	11	7	6	7	3	2	*	53	H
NO. OF DAYS WITH MEASURABLE SNOW	12	7	10	9	2	*	0	0	3	4	7	10	64	H
NO. OF DAYS WITH M. PRECIPITATION	12	7	11	11	10	11	7	6	8	6	8	10	107	H
000 PINCHER CREEK TOWN	LATITUDE 49 31 N LONGITUDE 113 58 W ELEVATION 3750 FT ASL													
MEAN DAILY TEMPERATURE (DEG F)	17.2	20.6	26.3	39.3	48.6	55.0	62.1	59.8	51.6	43.1	30.0	23.5	39.8	3
MEAN DAILY MAXIMUM TEMPERATURE	26.6	31.3	37.4	50.9	61.0	67.3	77.1	74.8	65.2	54.9	39.8	32.4	51.6	3
MEAN DAILY MINIMUM TEMPERATURE	7.7	10.6	15.5	27.7	36.1	42.6	47.1	44.8	38.0	31.3	20.2	14.7	28.0	3
EXTREME MAXIMUM TEMPERATURE	59	62	67	85	87	94	97	94	97	89	74	62	97	1
NO. OF YEARS OF RECORD	62	59	61	58	58	60	63	60	57	64	63	63		
EXTREME MINIMUM TEMPERATURE	-48	-41	-36	-11	-1	24	31	30	0	-16	-35	-38	-48	1
NO. OF YEARS OF RECORD	62	58	60	58	58	59	64	62	57	64	62	63		
NO. OF DAYS WITH FROST	29	27	29	21	8	1	*	*	6	15	25	29	190	3
MEAN RAINFALL (INCHES)	0.01	0.01	0.11	0.67	2.63	4.37	1.51	1.81	1.47	0.48	0.09	0.02	13.18	H
MEAN SNOWFALL	12.4	11.7	13.4	14.7	3.0	7	0.0	0.0	4.1	7.0	11.7	11.3	89.3	H
MEAN TOTAL PRECIPITATION	1.25	1.18	1.45	2.14	2.93	4.37	1.51	1.81	1.88	1.18	1.26	1.15	22.11	H
GREATEST RAINFALL IN 24 HRS	0.24	0.84	0.67	1.44	5.02	2.76	3.10	3.12	2.70	1.85	0.55	0.45	5.02	1
NO. OF YEARS OF RECORD	60	57	59	58	58	59	64	64	61	65	61	60		
GREATEST SNOWFALL IN 24 HRS	16.4	12.0	19.5	16.4	15.5	1.0	0.0	0.0	13.6	16.0	31.0	12.0	31.0	1
NO. OF YEARS OF RECORD	58	56	59	58	58	60	64	64	61	65	61	59		
GREATEST PRECIPITATION IN 24 HRS	1.64	1.20	1.95	1.64	5.02	2.76	3.10	3.12	2.89	1.85	3.10	1.20	5.02	1
NO. OF YEARS OF RECORD	58	56	60	58	59	60	64	64	62	65	61	59		
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR	TYPE

ÉLÉMENT ET STATION	JANV	FÉV	MARS	AVR	MAI	JUN	JUIL	AOÛT	SEPT	OCT	NOV	DÉC	ANS	
ALBERTA														
000 PINCHER CREEK TOWN	LATITUDE 49 31 N LONGITUDE 113 58 W ELEVATION 3750 FT ASL													
NOMBRE DE JOURS AVEC PLUIE MESURABLE	*	*	1	3	9	11	7	7	6	3	1	*	48	3
NOMBRE DE JOURS AVEC NEIGE MESURABLE	6	6	6	5	1	*	0	0	1	3	4	5	37	3
NOMBRE DE JRS AVEC PRÉCIPITATION MML.	6	6	7	7	9	11	7	7	7	6	5	5	83	3
000 PINE LAKE	LATITUDE 52 10 N LONGITUDE 113 30 W ELEVATION 3050 FT ASL													
TEMP. MOYENNE QUOTIDIENNE (DEG F)	5.7	13.2	21.0	37.1	48.9	55.1	60.3	57.7	49.2	40.1	24.0	13.4	35.5	8
TEMPÉRATURE MAX. QUOTIDIENNE MOYENNE	17.1	25.5	32.4	49.3	62.3	68.2	74.1	71.5	62.6	53.0	34.5	24.2	47.9	8
TEMPÉRATURE MIN. QUOTIDIENNE MOYENNE	-5.8	0.9	9.5	24.8	35.4	42.0	46.5	43.9	35.7	27.1	13.4	2.6	23.0	8
TEMPÉRATURE MAXIMALE	56	59	68	78	87	92	97	96	95	83	63	56	97	6
NOMBRE D'ANNÉES EN RECORD	10	10	10	10	10	10	10	10	10	10	11	11		
TEMPÉRATURE MINIMALE	-47	-45	-39	-6	11	25	31	32	16	-6	-35	-39	-47	6
NOMBRE D'ANNÉES EN RECORD	10	10	10	10	10	10	10	10	10	10	11	11		
NOMBRE DE JOURS DE GEL	31	28	30	26	9	2	*	*	9	23	29	31	218	6
HAUTEUR DE PLUIE MOYENNE (POUCHES)	0.02	0.01	0.04	0.63	2.18	3.35	3.15	2.75	1.70	0.49	0.08	0.03	14.43	8
CHUTE DE NEIGE MOYENNE	8.3	7.0	6.0	7.2	1.3	1	0.0	0.0	2.0	5.3	6.8	5.9	49.8	8
PRÉCIPITATION TOTALE MOYENNE	0.84	0.71	0.64	1.35	2.31	3.35	3.15	2.75	1.90	1.02	0.76	0.62	19.40	8
PLUIE MAXIMUM EN 24 HEURES	0.05	0.10	0.08	0.50	1.28	3.21	2.70	1.64	2.50	1.22	0.13	7	3.21	6
NOMBRE D'ANNÉES EN RECORD	9	10	10	10	10	10	10	10	10	10	11	11		
CHUTE DE NEIGE MAXIMUM EN 24 HEURES	8.0	6.7	4.2	5.4	5.0	7	0.0	0.0	7.0	8.5	10.0	5.5	10.0	6
NOMBRE D'ANNÉES EN RECORD	10	9	9	10	10	10	10	10	10	10	10	11		
PRÉCIPITATION MAXIMUM EN 24 HEURES	0.80	0.67	0.42	0.96	1.28	3.21	2.70	1.64	2.50	1.22	1.00	0.55	3.21	6
NOMBRE D'ANNÉES EN RECORD	9	9	9	10	10	10	10	10	10	10	10	11		
NOMBRE DE JOURS AVEC PLUIE MESURABLE	*	*	*	2	9	11	13	9	9	3	1	0	57	6
NOMBRE DE JOURS AVEC NEIGE MESURABLE	8	6	6	4	1	8	0	0	1	3	5	6	40	6
NOMBRE DE JRS AVEC PRÉCIPITATION MML.	8	6	6	6	10	11	13	9	9	5	6	6	95	6
000 PINTO LO	LATITUDE 54 47 N LONGITUDE 119 24 W ELEVATION 3500 FT ASL													
TEMP. MOYENNE QUOTIDIENNE (DEG F)						54.3	58.5	56.0						8
TEMPÉRATURE MAX. QUOTIDIENNE MOYENNE						63.3	68.0	65.3						8
TEMPÉRATURE MIN. QUOTIDIENNE MOYENNE						45.2	49.0	46.6						8
TEMPÉRATURE MAXIMALE				64	79	88	85	88	82	72				6
NOMBRE D'ANNÉES EN RECORD				1	5	8	8	6	5	4				
TEMPÉRATURE MINIMALE				23	30	38	30	20	26					8
NOMBRE D'ANNÉES EN RECORD				4	6	6	6	6	1					
NOMBRE DE JOURS DE GEL						1	0	*						8
HAUTEUR DE PLUIE MOYENNE (POUCHES)						1.74	3.42	3.68	3.15	2.52				8
CHUTE DE NEIGE MOYENNE						7.4	0.3	0.0	1.9	3.5				8
PRÉCIPITATION TOTALE MOYENNE						2.58	3.45	3.68	3.34	2.87				8
PLUIE MAXIMUM EN 24 HEURES				0.45	1.14	2.80	2.40	2.64	1.66	0.62	0.08			8
NOMBRE D'ANNÉES EN RECORD				5	10	10	12	12	10	9	1			
CHUTE DE NEIGE MAXIMUM EN 24 HEURES				11.0	15.0	3.0	0.0	3.2	5.0	12.0				8
NOMBRE D'ANNÉES EN RECORD				6	10	10	12	12	10	10				
PRÉCIPITATION MAXIMUM EN 24 HEURES				1.10	1.50	2.80	2.40	2.64	1.66	1.20				8
NOMBRE D'ANNÉES EN RECORD				6	11	10	12	12	11	11				
NOMBRE DE JOURS AVEC PLUIE MESURABLE				8	10	11	12	10						8
NOMBRE DE JOURS AVEC NEIGE MESURABLE				3	*	0	*	*						8
NOMBRE DE JRS AVEC PRÉCIPITATION MML.				10	10	11	12	11						8
000 POLLOCKVILLE	LATITUDE 51 05 N LONGITUDE 111 36 W ELEVATION 2425 FT ASL													
TEMP. MOYENNE QUOTIDIENNE (DEG F)	2.6	12.0	20.0	37.7	51.8	59.7	65.4	62.7	52.2	41.0	23.3	11.6	36.7	4
TEMPÉRATURE MAX. QUOTIDIENNE MOYENNE	13.3	23.4	31.4	50.4	66.5	73.8	81.1	78.1	67.1	56.1	35.8	22.6	50.0	4
TEMPÉRATURE MIN. QUOTIDIENNE MOYENNE	-8.1	0.6	8.4	25.0	37.0	45.4	49.6	47.3	37.3	25.9	11.3	0.9	23.4	4
TEMPÉRATURE MAXIMALE	54	60	72	85	89	97	102	107	100	85	70	63	107	4
NOMBRE D'ANNÉES EN RECORD	18	17	17	16	15	18	18	15	17	18	16	17		
TEMPÉRATURE MINIMALE	-48	-46	-36	-27	9	21	34	30	13	-2	-28	-48	-48	4
NOMBRE D'ANNÉES EN RECORD	18	17	17	16	15	18	18	15	17	17	18	18		
NOMBRE DE JOURS DE GEL	31	28	30	25	8	1	0	*	8	25	30	31	217	4
HAUTEUR DE PLUIE MOYENNE (POUCHES)	0.01	0.03	0.06	0.45	1.29	2.38	1.56	1.83	1.31	0.32	0.05	0.01	9.30	8
CHUTE DE NEIGE MOYENNE	6.6	6.0	5.6	4.9	0.8	0.0	0.0	0.0	0.2	3.2	4.1	3.6	35.0	8
PRÉCIPITATION TOTALE MOYENNE	0.67	0.63	0.62	0.94	1.37	2.38	1.56	1.83	1.33	0.62	0.46	0.37	12.78	8
PLUIE MAXIMUM EN 24 HEURES	0.10	0.93	0.40	0.62	1.60	3.50	3.33	2.60	1.14	1.30	0.25	0.15	3.50	4
NOMBRE D'ANNÉES EN RECORD	18	17	16	16	15	18	18	14	16	18	18	18		
CHUTE DE NEIGE MAXIMUM EN 24 HEURES	4.5	5.0	5.0	10.5	3.0	0.0	0.0	0.0	2.0	4.5	6.8	6.0	10.5	4
NOMBRE D'ANNÉES EN RECORD	17	16	15	16	16	18	18	15	17	17	18	18		
PRÉCIPITATION MAXIMUM EN 24 HEURES	0.45	0.93	0.50	1.05	1.60	3.50	3.33	2.60	1.14	1.30	0.68	0.60	3.50	4
NOMBRE D'ANNÉES EN RECORD	17	16	15	15	15	18	18	14	16	17	18	18		
NOMBRE DE JOURS AVEC PLUIE MESURABLE	*	*	*	2	6	9	8	7	6	2	1	*	41	4
NOMBRE DE JOURS AVEC NEIGE MESURABLE	8	5	4	3	1	0	0	0	*	1	3	5	30	4
NOMBRE DE JRS AVEC PRÉCIPITATION MML.	8	5	4	5	6	9	8	7	6	3	4	5	70	4
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR	TYPE

APPENDIX 12

STUDY AREA - EROSION HAZARD

(BAYROCK SURFICIAL GEOLOGY LTD.)



PROPOSED STUDY AREA

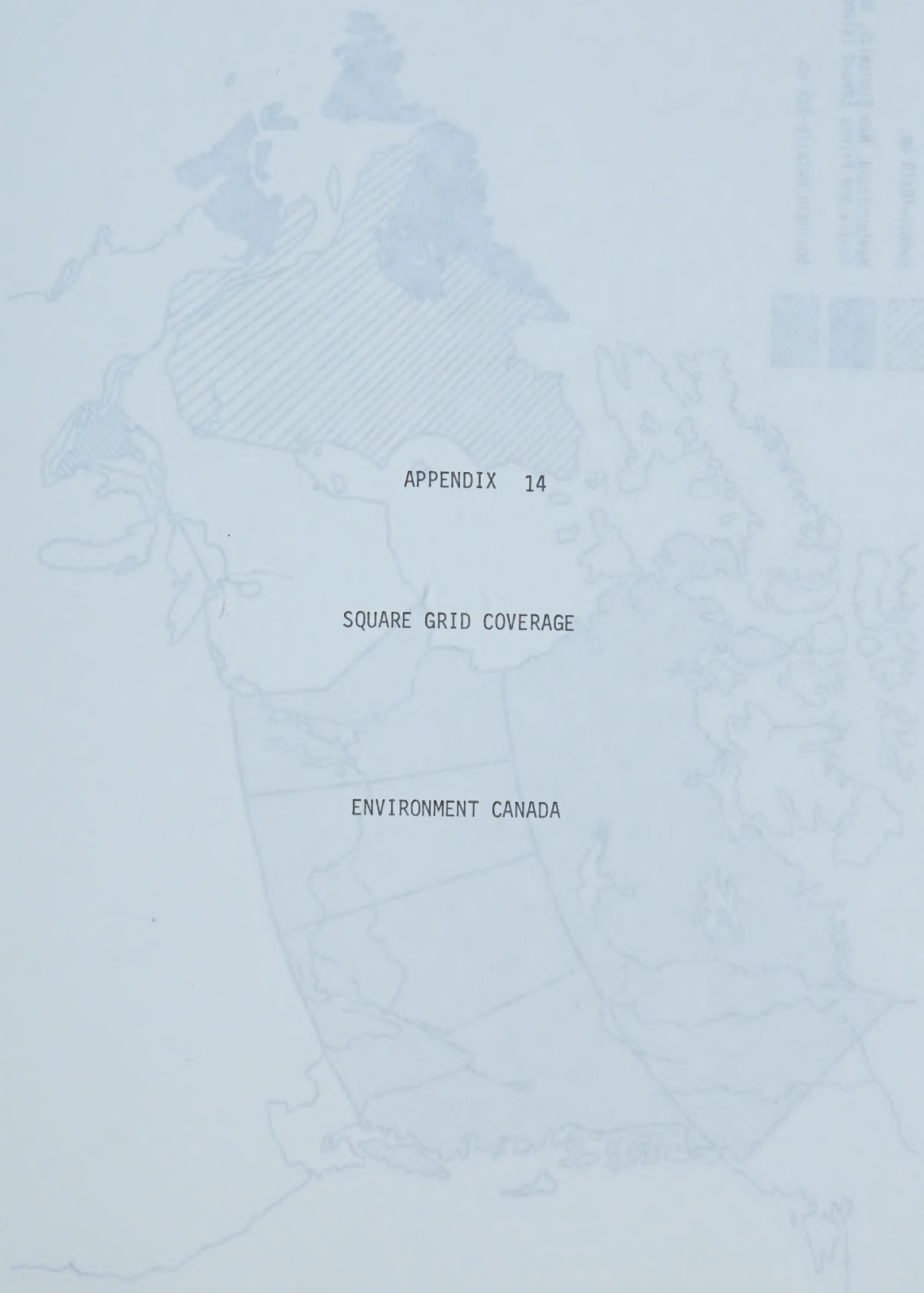
APPENDIX 13

SOIL IRRIGABILITY REPORTS

EARTH SCIENCES AND LICENSING DIVISION

ALBERTA ENVIRONMENT

- THE IRRIGATION OF GLACIAL SOILS IN ALBERTA, CANADA
- IRRIGATION STUDY BASIN - ANNUAL REPORT NO. 1, CALENDAR YEAR 1967
- IRRIGATION STUDY BASIN - ANNUAL REPORT NO. 2, CALENDAR YEAR 1968
- IRRIGATION STUDY BASIN - ANNUAL REPORT NO. 3, 1968-69 IRRIGATION YEAR
- IRRIGATION STUDY BASIN - ANNUAL REPORT NO. 4, 1969-70 IRRIGATION YEAR
- IRRIGATION WITH SEWAGE EFFLUENT - GRANUM, ALBERTA
- A LABORATORY STUDY OF SOME EFFECTS OF IRRIGATION WITH MUNICIPAL SEWAGE EFFLUENT
- A LABORATORY STUDY OF SOME EFFECTS OF IRRIGATION WITH MUNICIPAL AND INDUSTRIAL SEWAGE EFFLUENT
- A LABORATORY STUDY OF SOME EFFECTS OF SUPERNATANT LIQUORS ON SOILS AND PLANT GROWTH
- MEDICINE HAT COLLEGE SOILS REPORT
- MIGRATION OF SOLUBLE SALTS IN AN IRRIGATED FIELD IN RELATION TO RAINFALL AND IRRIGATION
- RED DEER RIVER DEVELOPMENT PROJECT PRELIMINARY IRRIGABILITY STUDY
- THE SHALLOW GROUNDWATER TABLE AND ITS RELATIONSHIP TO IRRIGATION
- SOIL CAPABILITY FOR IRRIGATION WITHIN THE STURGEON BASIN AREA
- SOIL DRAINAGE EFFECTIVENESS ON SALT AND WATER AFFECTED IRRIGATED LANDS IN SOUTHERN ALBERTA
- SOUTH SASKATCHEWAN RIVER BASIN IRRIGABILITY STUDY
- A STUDY OF THE ROLE OF IRRIGATION ON WATER QUALITY DETERIORATION



APPENDIX 14

SQUARE GRID COVERAGE

ENVIRONMENT CANADA

GRID SIZE

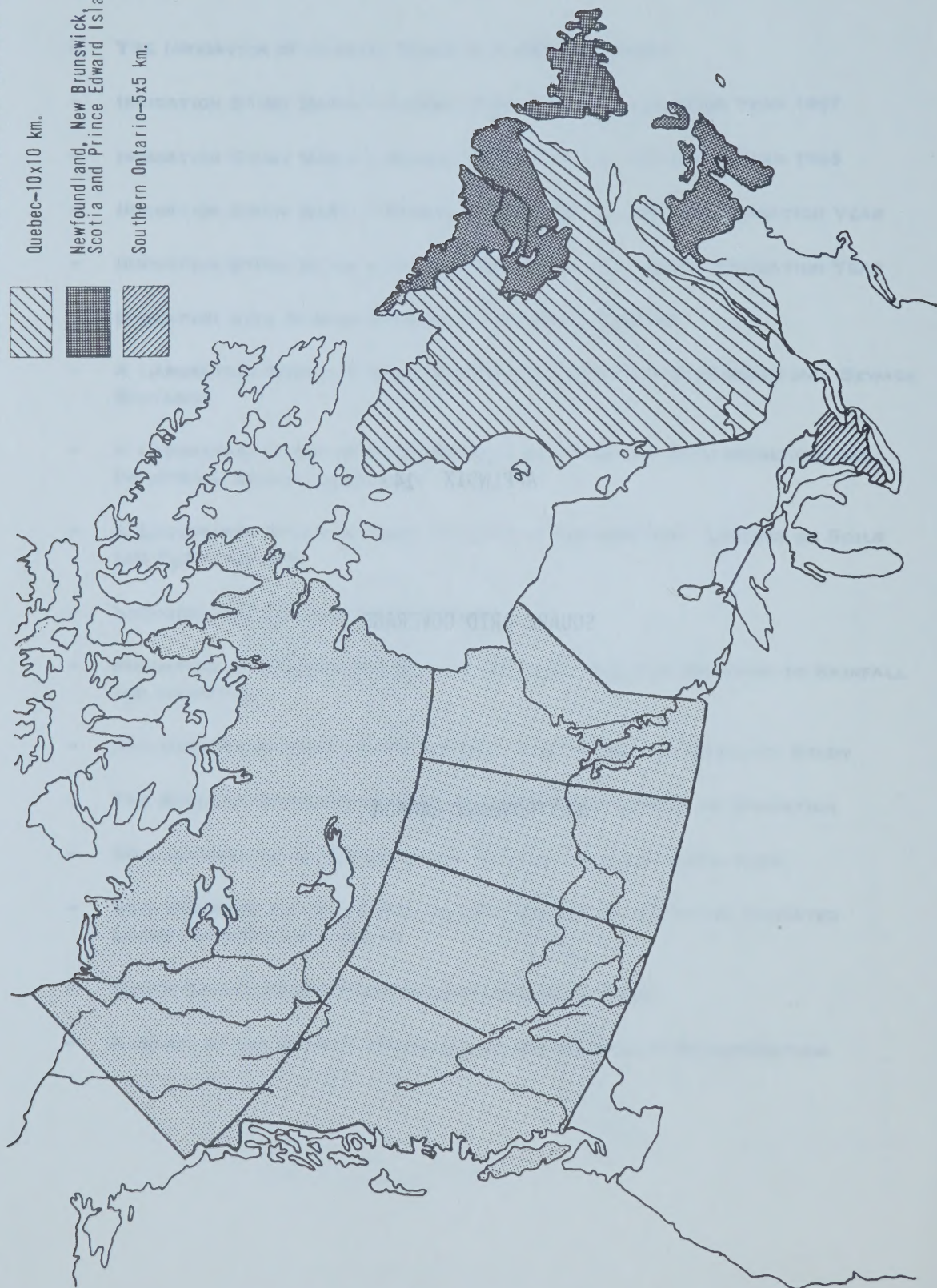


British Columbia, Prairie Provinces and Northwest Territories-10x10 km.

Quebec-10x10 km.

Newfoundland, New Brunswick, Nova Scotia and Prince Edward Island-10x10km.

Southern Ontario-5x5 km.



NOTE: Areas are distinctly separate with respect to individual studies conducted in each area.

